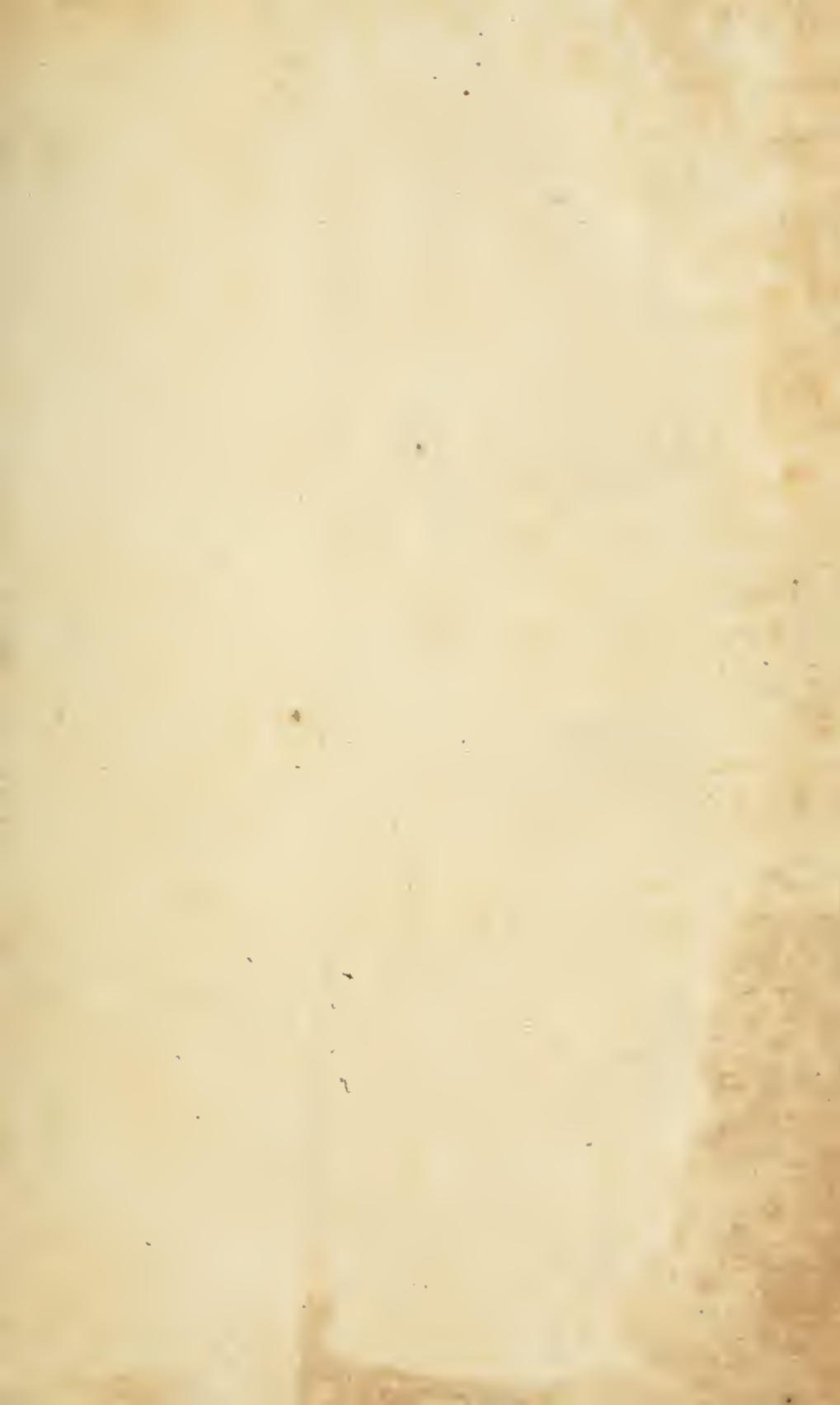


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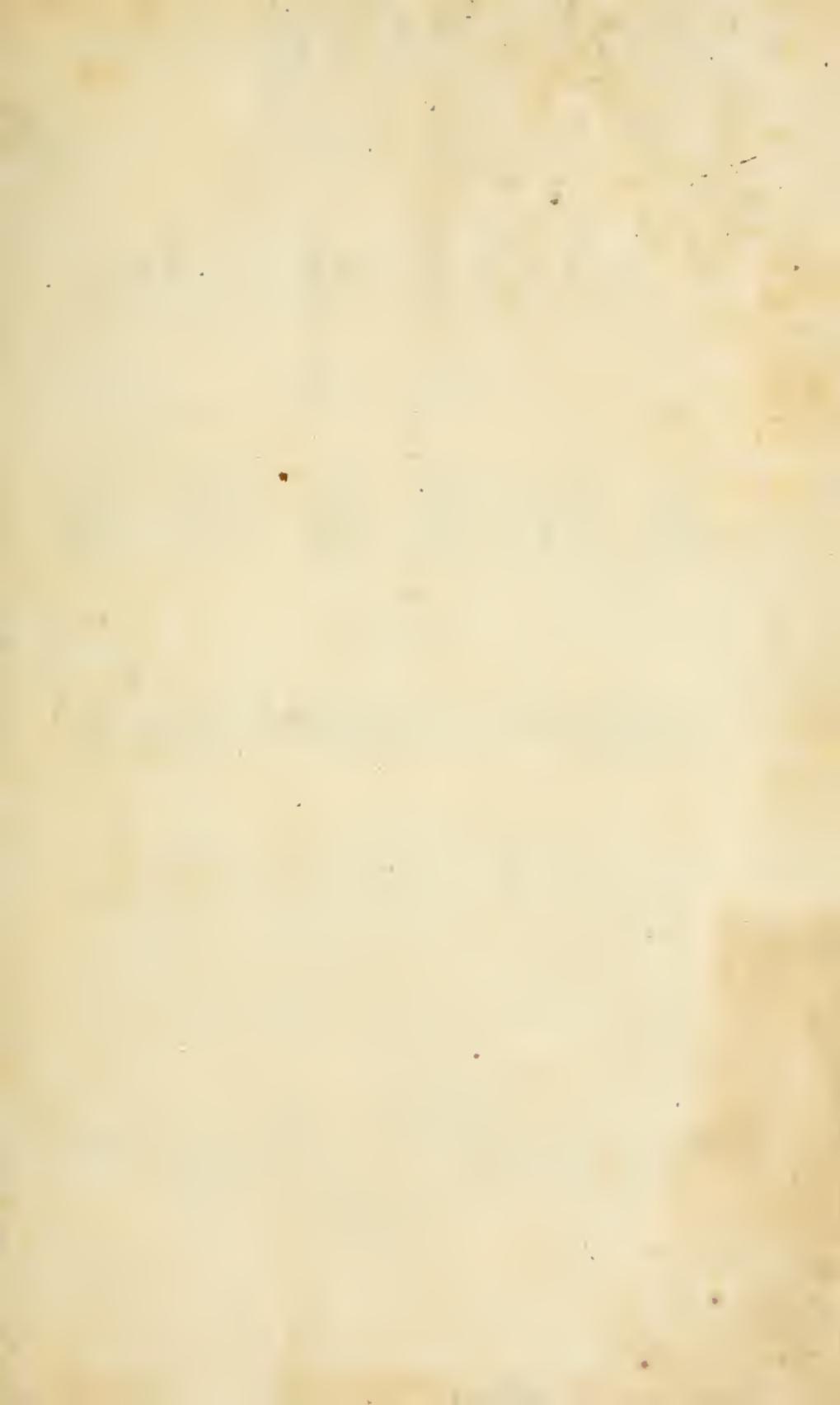


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OBSERVATIONS

A N D

DISCOVERIES

MADE UPON

HORSES,

WITH

A New Method of Shoeing.

*By the Sieur LA FOSSE,*

FARRIER to the King of FRANCE.

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With COPPER-PLATES.

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LONDON,

Printed for J. NOURSE at the Lamb opposite  
Katherine-Street in the Strand.

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論語卷第十一有子篇之第十一

THE  
EDITOR's PREFACE  
TO THE  
READER.

 *INCE experimental philosophy has been so happily propagated by the learned of our own nation ; it has been spread and adopted into all the seminaries of Europe wherever the native curiosity of mankind, gratified and improved by an application to the liberal arts, has prevailed. It is to this we owe, this day, the benefits arising to mankind, from the progress made in physic and surgery ; it is to this we owe the removal of prejudices in every part of learning, and the replacing of it with certainties and plain truths ; and it is in a word from this the reciprocal benefits accruing from one nation to another, by their improvements and inventions, daily arise.*

However negligently the diseases of horses have been heretofore committed to the care of the most ignorant among mankind ; the great use these animals are of in the œconomy of life has at last pointed out to men of sense and learning to take them into their consideration : Comparative anatomy has excited them, and the great similarity of parts,

offices, and functions in the structure of a horse with those of human nature, was a sufficient allure-  
ment to invite gentlemen to take them under a more  
mature consideration, and to rescue the noble ani-  
mals from the hands of the most illiterate empir-  
rics.

I do not intend to expatiate upon the use and im-  
portance of these animals in life, as they are evi-  
dent already to every observer; I mean only to give  
some little account of the improvements made by  
the Sieur la Fosse upon farriery in the following  
treatise; which I am the more ready to do that  
those of my countrymen, whose concerns require the  
employment of horses, may profit of it in their ma-  
nagement and the cure of their diseases.

Nor would I in the least forget the sensible treatises wrote and published by our own authors Gib-  
son, Bracken, and Bartlet, who have treated the  
subject in a learned manner, and who made  
early and ingenious steps towards reducing it to a ra-  
tional system, well knowing it was a matter of  
weight enough to engage the most sagacious in the  
improvement of an art, from which so considerable  
a benefit arises to the greater, and indeed the superior,  
part of mankind.

But I should think myself wanting in the duty I  
owe my country, if I did not propagate among  
them, whatever occurred to me that might tend to  
such laudable ends, in the most speedy and best manner  
I could. And therefore as soon as this valuable  
little book came to my bands, I took care to tak:

the proper measures for communicating, to the public, those useful hints that appeared in it upon the most important points of farriery; being additional discoveries to what has already been ever made in any country.

This author then has given the anatomy of a horse's foot, and in the most clear manner laid down the different degrees of punctures a horse is liable to, and their different consequences, which he has carefully demonstrated by proper representations in copper plates, as well as amply provided for in the method of cure, as far as human skill and penetration can go; and in the whole, it appears that he is very well versed in the anatomical distribution of the parts of a horse, or has been assisted by some able anatomist; and from his observations on the parts, he has found that farriers were perpetually rowelling, cauterising, and applying topical medicines to parts of horses that had no ailment, by their ignorance of such as were the real seats of their disorders.

Another important discovery of this author is his pointing out the true seat of the glanders, which has always been thought a disease of the lungs; Mr. Bartlet, one of our English authors has approved and adopted his doctrine, and has added some judicious remarks of his own upon it; by which he merits the thanks of his countrymen in general.

I shall only take the liberty to add briefly a word  
or

or two concerning two other points of as great moment as those mentioned ; the first is his application of the powder of the Puff-balls to stop the blood in divided arteries, and the other is an improvement upon the manner of shoeing horses.

As to the first he has made such undeniable experiments in cases of amputation of limbs and other parts, that the certificates of the Royal Academy of Sciences at Paris were readily granted him, as will be seen in the sequel of his book ; and indeed the great benefit of this discovery does not stop here ; it will be extended to cases of amputation in mankind, and be capable of taking away a considerable part of their pain as well as other accidents that sometimes attend the usual methods in surgery, of providing against dangerous hemorrhages.

And in a word, the reader will find many curious remarks upon the methods of shoeing, which it were to be wished, our farriers will soon come into ; and many precautions which cannot fail of giving great satisfaction, as well as conduce very much to the profit of all keepers of horses.

We must inform the reader, further that (as our ingenious author has translated the chief part of Mr. Bartlet's 12th chapter upon the diseases of horses in this book, we have thought it necessary to transcribe the English original here, because it contains the scope of the Sieur la Fosse's discoveries upon the glanders ; and because Mr. Bartlet, besides trepanning as our author mentions it for this disease, directs keeping open another hole, which he calls the lower hole, with a leaden hollow tent,

to,

to let the matter run off; this lower hole appears by the foregoing paragraphs to be made into the maxillary sinus, by perforation in the place of a tooth drawn for that purpose; and this hint is wisely taken from the invention of Drake and Cooper, which makes Mr. Bartlet compare the ozæna and its method of cure to the glanders, and from thence add the keeping open this lower hole in the manner mentioned above; as well as that on the horse's cheek, opened by the trepan, as invented by the Sieur la Fosse; nor indeed can it be thought, in our opinion, an useless addition; we must further add that the instrument referred to by Mr. Bartlet in the adjoining paragraph, is no other than the trepan, which this author has added to his copy of the Sieur la Fosse's plate of the head of a horse.

## E R R A T A.

Page	Line
11	13 for cup or. r. cut in the capsula
12	10 r. 4. the holes.
16	1 for coronary, r. coronet
Ibid.	2 for which was discussed, r. they resolved upon drawing the sole.
Ibid.	16 for harnessed, r. put to
27	8 for by, r. for the thread, a spongy excrescence so called
34	6 for smear it over r. disfigure it.
Ibid.	24 for amputation r. operation.
35	4 for ample r. firm.
36	12 for contrary to nature, r. this preternatural bone.
38	15 for medicine r. farriery.
39	24 for hypiatric r. hippiatric.
44	17 for snot r. matter.
46	6 for of four r. to four.
48	4 for description r. design.
52	12 for diminished r. confined down.

*BOOKS printed for J. NOURSE at the Lamb  
opposite Katherine-street in the Strand.*

A TREATISE on the Diseases incident to Children from their Birth to the Age of fifteen; with particular Instructions to tender Mothers, prudent Midwives, and careful Nurses. The Whole made familiar to every Capacity. By the learned Dr. JOHN ASTRUC, Regius Professor of Medicine at Paris, and chief Physician to his present Majesty the King of France, &c. Octavo, 1746.

ACADEMICAL LECTURES ON FEVERS; in which the essential Symptoms and Nature of the various Kinds of Fevers are described, the immediate Causes pointed out, with the general and particular Indications in the Method of Cure subjoined to each. Confirmed by the Author's successful Practice for forty Years; read in the Royal College at Paris. By the same Author, Octavo. 1747.

A DISSERTATION ON THE FOOD, and Discharges of Human Bodies. By BRYAN ROBINSON, M. D. Octavo. 1748.

BOERHAAVE'S MEDICAL CORRESPONDENCE; Containing the various Symptoms of Chronical Distempers, the Professor's Opinion, Method of Cure, and Remedies. To which is added, his Practice in the Hospital at Leyden, with his Manner of instructing his Pupils in the Cure of Diseases. Octavo, 1745.

In this Collection are contained many Letters, wrote originally in English, to the Doctor by Persons of Distinction, Gentlemen and Ladies, &c. with his Answers; such are marked \*\*, the rest are translated from the Latin.

THE DISPENSATORY of the Royal College of Physicians, London. Translated into English, with Remarks, &c. by H. PEMBERTON, M. D. Professor of Physic in Gresham College, and F. R. S. Octavo 1749. The second Edition.

A COURSE OF PRACTICAL CHEMISTRY, in which are contained all the Operations described in Wilson's complete Course of Chemistry, with many new and uncommon Processes. To each Article is given the Chemical History; and to most an Account of the Quantities of Oil, Salt, Spirits, yielded in Distillation, &c. from Lemery, Hoffman, the French Memoirs, Philosophical Transactions, &c. and from the Author's own Experience; with Copper-Plates. By WILLIAM LEWIS, M. B. F. R. S. Octavo. 1746.



## ADVERTISEMENT.

HE dissertations set forth in the table of observations are the fruits of the knowledge of anatomy. It is to that alone I owe all my discoveries, and if I am sometimes obliged to deviate from the common rules of practice, these very principles in anatomy, and the destructive errors I formerly fell into, are the cause of it.

A

I never

I never had any more knowing masters than those of my own fraternity, and therefore am more sensible than any other, how far I am from being perfect ; but however imperfect my first plan may be, I would, at least, claim the advantage of having first opened the way. If my brethren are willing to lead their children in the same path, and to cause those intended for the profession of Farriery to study anatomy in time ; I am very confident fewer errors will be committed, and the art will in a little time be carried farther than it ever yet has been.

However,

However, as the knowledge of anatomy is not the only requisite for a progress in our profession, it would be highly necessary to join with it that of medicine. How shall we cure diseases if we do not know them? how are remedies to be applied, if we are not certainly acquainted with either their vertues or effects? In a word, how are just prognostics to be made upon diseases, if we are not truly enlightened either by our own study, or by some able and careful master?

It is yet to be wished that all

A 2 who

who undertake the cure of horses, were versed in the structure of that animal, they would avoid those errors which disgrace the farrier, and deprecate his profession, which is of such moment to the public.





A

# L I S T

OF IMPORTANT

## Observations *and* Discoveries UPON SEVERAL ACCIDENTS that happen to HORSES.

1.  HE exact anatomy of a horse's foot.

2. A history of the causes and seat of different diseases, said to be in the hip, or shoulder, which lame the horse, and are demonstrated to be in the foot.

3. A train of new experiments and observations upon the glanders.

4. A memoir presented to the academy of sciences,

sciences, upon a method of stopping the blood in large arteries.

5. A new method of shooing horses, both for preserving their feet, and to prevent their slipping upon smooth pavements.



A

T A B L E  
O F  
O B S E R V A T I O N S.

1. THE anatomical plate of the dissected parts of a horse's foot, with their several figures, crossed by six parallel right lines, the space of which shews, upon every part, the importance of the accidents that happen to them; so that the quality and seat of each may be sufficiently known, to make a true prognostic upon their different kinds, without having studied anatomy.
2. That the cause of the lameness in horses, which is commonly looked for in the shoulders or haunches, is in the foot, proceeding from the compression of the fleshy sole, by the coronary bones pushing against it: this lameness often becomes incurable by the coalescing of these bones, for want of applying remedies as soon as perceived.
3. The rupture of the great tendon called the *Tendo Achillis*.
4. The fracture of the coronary bone into three pieces, and sometimes more.
5. The fracture of the nut-bone in two, and sometimes

sometimes in three parts, but always fractured with the coronary bone.

6. The fracture of the foot bone only in two.
7. A set of new experiments and observations upon the glanders, as a supplement, to a treatise on that disease, published in 1749.
8. The manner of stopping the blood of the great arteries cut asunder, without either ligature or caustic; with the judgment of the Royal Academy of Sciences, in consequence of the reports of the committee, testifying the experiments made before them.
9. The method of shooing horses, in order to secure them upon a pavement in summer, or in winter, although quite smooth; and the advantages attending it; 1. They are not so liable to cast their shoes. 2. The fleshy sole is secured from several accidents: 3d. To preserve the legs and render their motions more easy.
10. A note of what Dr. Bracken says in his translation of my treatise upon the glanders.
11. A translation of what relates to the glanders, in the treatise lately published in London by Mr. Bartlet, surgeon.

T H E

## A N A T O M I C A L   T A B L E.

The dissected parts of a horse's foot, and their figures, crossed by six horizontal, parallel right lines, the space of which indicates, upon every part, the importance of the accidents that happen to them; so that the quality and seat of each may be sufficiently known, to make a true prognostic upon their different kinds without having studied anatomy.

E X P L A N A T I O N   o f   t h e   F I G U R E S  
o f   t h e   S E C O N D   P L A T E.

T H E first figure represents the bottom of a horse's foot.

A. is the horny sole.

B. the frog.

2. The hoof towards its lower edge, called by the author the wall of the foot.

Figure the second shews the horny sole A. raised from the fleshy sole C. round which is the en-channelled flesh, 6. placed in the fulcus of the inner surface of the hoof: 5. the horny part of which is soft and white.

Figure the third represents the under part of the fleshy sole C. raised from the foot bone \* D. G the covering or *theca* of the *Tendo Achillis*. 2. The cartilage. 6. The edge of the fleshy sole confined in the furrow of the channelled horny substance.

\* The foot-bone is Gibson's *Coffin-bone*.

The

The fourth figure shews a back view of the leg.

7. The skin laid open, in order to view the inner soft parts belonging to the articulations.

8. The aponeurotic membrane, formed of different laminæ, which separate the muscles and cutaneous tendons.

9. and 3. Are partly the covering of the flexor tendon of —

5. The coronary bone \*, which serves as a covering to the Tendo Achillis, 10.

11. The ligament of the cannon-bone, the pastern and the coronary bones;

16. The cup or capsula of the tendon of the coronary bone.

18. The canon-bone †.

6. The foot-bone.

Figure the fifth is the same leg and in the same view.

2. The foot bone.

1. The Tendo Achillis, dissected to shew the coronary bone 6.

3. The nut-bone ‡.

4. The concave part of the foot-bone to which the tendon is fixed.

7. The ligament of the foot-bone with the nut-bone.

\* The coronary bone is the little pastern of Gibson.

† French authors call those bones, *Canon bones* both before and behind, which Gibson calls in the fore legs, the *Shank bones*, and in the hind legs the *Instep bones*.

‡ The nut-bone called by the French *Os de la noix* is a little oblong bone placed across at the junction of the little and great pasterns behind, which is not taken notice of by Gibson.

8. The ligament of the tendon with the nut-bone.

Figure the sixth represents the *Tendo Achillis* raised and separated from figure 5. To shew the lamina 8. which serves as a ligament to the nut-bone of the same figure.

Figure the seventh shews the enchannelled flesh, 1. The wall or hoof being raised from it; 2. The rough border that surrounds the enchannelled flesh above the hoof.

3. The cartilage of the foot.

4. The extensor tendon of the foot.

Figure the eighth demonstrates the bone of the foot Z. the enchannelled flesh of which is rais'd with the cartilage.

5. The ligament of the coronary bone with that of the foot.

3 and 4. The extensor tendon of the foot.

*The third plate, containing figures of the osteology and fracture of the bones.*

Figure the first represents a fore view of the leg.

3. The canon-bone cut across at the upper end.

4. The pastern bone.

5. The coronary bone.

6. The foot bone.

The second figure is a back view of the same leg.

8. The canon-bone.

4. The pastern.

5. The coronary bone.

3. The nut-bone which cannot be seen in a fore view.

6. The foot, or coffin-bone.

The third figure is another back view of the same leg.

16. The place where the artery divides into two branches.

5. The distribution of these two branches round the foot.

The holes into which these two branches pass, in the foot.

6. The foot bone.

The fourth figure is the coronary bone viewed anteriorly, with the marks of its fractures, 1, 2, 3.

The fifth figure is the same coronary bone in a back view with the appearance of the same fractures, 1, 2, 3.

The sixth is the nut-bone fractured into three parts, 4, 5, 6.

The seventh shews the same bone fractured in two, 4. 4.

The eighth is a figure of the foot bone viewed on its upper surface fractured in two, with the mark of the fracture, 6, 7.

The ninth is a view of the under surface of the same bone, with the fracture marked 6. 7. this bone is very spongy.

# OBSERVATIONS

UPON SUCH

## ACCIDENTS

*As often happen to horses feet, which give them a sudden lameness, the cause of which cannot be discovered.*

---

### OBSERVATION I.

A lame horse was committed to my care, but I could receive no manner of information concerning his disorder; and after I had dressed him for eight and twenty days, without either discovering the cause, or the least success: they put him into the hands of another farrier, who also attended him fifteen days longer. The owner of the horse seeing this man's endeavours as fruitless as mine, gave him up to me, and I cut off his leg in order for dissection; and found the *Tendo Achillis* ruptured near its insertion, and the coronary bone broke into three pieces, without any dislocation; having as recent an appearance as if they had been fractured but a day; altho' the accident happened six weeks before. And not being able to find out how, nor by what particular effort

effort this bone could be broken ; nor whether it was begun by the foot, or pastern bone ; I shewed it to several skilful persons, who after a long examination appeared as much at a stand about it as myself. Nor was there any sudden effort of the horse observed before it.

#### O B S E R V A T I O N   II.

With respect to such efforts, I myself saw a horse, put to a coach, fracture the coronary bone at his first setting off.

#### O B S E R V A T I O N   III.

I happened to pass by a coach, when the coachman, ready to put off, whipped his horse, who instantly made a spring, and became suddenly lame ; having observed it, I felt his foot, and the rattling noise I was sensible of, by touching him, indicated the coronary bone to be fractured ; and the dissection farther proved the Tendo Achillis to have been ruptured near its insertion, as may be seen by the figures.

#### O B S E R V A T I O N   IV.

A horse who was put to a coach, being at the same time very quiet, received a cut of a whip from the coachman, which made him tremble, whence he suddenly fell lame ; the coach-

coachman saw it and looked at his foot. And though nothing ailed him to appearance, he put him into the stable. I was called and found the coronary-bone fractured, declaring him incurable; but this was doubted, because they had not observed any effort made by the horse before it; however they took care of, and dressed him for a month, but as he grew no better, they put him to death; I dissected his foot to shew them I was not mistaken; I demonstrated that the coronary-bone was fractured into three pieces: but was surprised to find the nut-bone also broke in two, and the *Tendo Achillis* entire, because I never saw fractures of this kind before, among the many dissections I had made.

#### OBSERVATION V.

Having examined a horse, whose shoulder was dressed, which was thought the seat of his disorder; I asserted it was in the foot, caused by the compression of the coronary-bone; for, that being in motion, it raises and pushes the nut-bone against the tendon, which puts the fleshy sole in a state of compression, as if between an anvil and hammer. It formed an inflammation there, and therefore they ought to have immediately drawn the sole; but as they had lost some time, and seeing he did not mend, I saw him again, and found a small swelling at the coronary,

coronary, which I shewed, and which was discussed by drawing the sole. They accordingly drew it out, after having fired the tumor; but he was not cured. He remained eight months in pain when they killed him. I found the *Tendo Achillis* ossified at its insertion with the coffin-bone, and this with the nut and coronary-bones, round which the cartilage was also coalesced, so that all these parts formed one entire body \*, the pieces of which I have yet by me. These examples make it apparent that the compression of the fleshy sole, for want of a speedy remedy, becomes incurable.

#### OBSERVATION VI.

Of a singular fracture which happened in 1743. I was called to see a horse who became suddenly lame of his two hind feet, being harnessed to a coach. It was thought he had strained his reins; I examined him, and declared his disorder was in his feet, and that it was incurable, for that he had fractures in them. I dissected these two feet and found the two coronaries fractured, and the two tendons of Achilles ruptured: this horse walked near a quarter of a league, with these two bones in that condition.

\* An Anchylosis.

## OBSERVATION VII.

Another horse put to a coach, without any apparent violent motion, fractured the coronary-bone in twenty pieces; while the nut-bone, that of the foot, and the great tendon remained unhurt; this was the only case of this kind I ever saw.

## OBSERVATION VIII.

Another horse had been lame a considerable time; and it was not known whether it was in the foot or shoulder: I examined him, and found the coronary-bone fractured, and assured them his case was incurable; they doubted it, but were obliged to abandon him at the month's end; I dissected his foot and accordingly found the coronary-bone fractured in four pieces, and the nut-bone in two, the *Tendo Achillis* being safe.

## OBSERVATION IX.

A horse was lame for four months ; he was dressed at first above the leg, and afterwards in the foot, but his sole was not drawn ; I judged him incurable, as I suspected an ankylosis, and he was put to death. I dissected the foot, and found the foot or coffin-bone fractured in two, in which fracture the ankylosis began to be formed, as well as the ossification between the coronary, nut and coffin-bones. The fracture crossed diametrically one of the cavities of the articulation, and ended towards the middle of the toe or point of the foot-bone. So that this bone appeared to be divided obliquely into two unequal parts ; It is not unlikely that the horse had trod upon a stone which raised one side of his foot more than the other, and which, joined to the weight of his body, caused this oblique fracture ; although the foot was in a perpendicular direction : this is the second fracture of this sort I have met with ; and it is curable if speedily taken in hand. I have already several feet, which are ossified like this.

## OBSERVATION X.

A horse was lame for two months without their knowing his case ; I pronounced the lameness to be in his foot, and shewed them a small swelling at the coronet, they attended him, but the swelling increased, for two years, by neglecting to draw the sole in the beginning. I dissected this foot, and found the nut, coronary, and coffin-bones ossified together ; which was caused by the discharge of the osseous juice upon them ; they were so coalesced together, that it was difficult to distinguish the places of the articulation of these three bones.

## OBSERVATION XI.

An ankylosis after an inflammation. An effort or strain which might not be violent enough to fracture the coronary nor nut-bones, nor even rupture the flexor tendon, might go so far as to produce an inflammation of the fleshy sole ; if the inflammation is communicated to the ligaments, tendons, and capsulæ of the joints. I pronounced it always incurable by the formation of an ankylosis in the part if not instantly taken in hand. I have seen two kinds of this disease in feet dissected by myself, an account of the pieces of which, as well

as of the fractured bones mentioned before, were added to the memoir given in to the academy as a supplement.

### OBSERVATION XII.

Drawing the sole prevents such ossifications as I have been mentioning, and relieves the fleshy sole from pressure; which sole is regarded as an expansion of the muscles and tendons of the foot; this operation enlarges the space in the hoof, the fleshy sole being no longer pressed, its inflammation ceases and the foot recovers its natural state.

When a horse's sole is drawn, care must be taken to let the foot bleed in order to empty the blood-vessels and lymphatics, to apply with the first dressings, turpentine and its spirit, or oil; and not to bind the splints too straitly, that the inflamed parts may not be injured, the coronet must be bathed with oil of turpentine, and the hoof dressed up all round with emollients, in order to moisten, extend and soften the parts.

### OBSERVATION XIII.

The hoof of a horse may be compared to a sponge; when it is dry it contracts itself even to the inner parts; if it be moistened, it softens and dilates; if he stands long in a stable without taking care to keep the hoofs moist, he often goes lame; because they are susceptible of contraction as well as dilatation. The compression in the hoof happens by the coronary pushing against the nut-bone, upon which it partly moves; which having the action of a lever, takes for its point of support the upper and fore-part of the foot-bone compressed; the nut-bone which it raises, and which pushes against the *Tendo Achillis*, which tendon presses the fleshy sole against the horny one; and all these combined compressions produce an inflammation upon the fleshy sole, which spreads over all the other parts.

## OBSERVATION XIV.

I have happened to dress the shoulders of lame horses, because the owners insisted that the cause was in that part ; although it really was in the feet, and proceeded from compression ; these horses were cured without having any remedies applied to the feet, but it was by great

chance, length of time, and rest; which often happens.

I can however assert that I never saw nor heard of a horse, put to hard labour, as drawing heavy carriages, or carrying heavy burdens, fracturing the coronary-bone.

#### OBSERVATION XV.

Strong compressions are distinguished by pushing the thumb upon the coronet, it makes a horse feel as sharp a pain as if there was a fracture; in this case no time must be lost before the sole is drawn.

When the compression is not so violent, as that it cannot be thus known by the coronet, it must be examined in the foot, the horny sole must be pared until it becomes flexible under the tool; which must be done as near the frog as can be; the tool must be pressed, and if the horse is sensible of it in that place, we may be assured that there is a compression of the coronary-bone upon the nut-bone. The method of cure is to pare the sole to the quick, to let him bleed at the point of the foot, and apply a pledget with oil of turpentine to the bleeding; also an emollient pultise in the foot and round the coronet. Above three fourths of these cases are cured without drawing the sole: but I prefer bleeding in the upper part of the foot, in expectation of the returning blood; whereby you will the better unload the part.

OBSER-

## OBSERVATION XVI.

The most certain remedy is to draw the sole immediately, I have cured horses in fifteen days by this method, that were not able to put their feet to the ground.

Again, the length of time the compression has continued, may be known by the adhesion of the horny to the fleshy sole, for the horse bleeds but little after drawing it; because of the interruption of the circulation of the fluids by the compression.

## OBSERVATION XVII.

A horse, drawing a cart heavily loaden, pressed his foot upon a piece of iron, which split the foot or coffin-bone. I took off the shoe and drew the sole immediately; and he was perfectly cured. This bone so split by the iron shews that this part, fractured by the mere effort or action of the horse, may unite, if presently taken in hand, even though the fracture happens above by the coronary-bone.

The fracture of the foot-bone which has no other motion but those of the fleshy and horny soles upon which it is situated, happens from one of the two convex sides of the lower part of the coronary-bone, the other side making an unequal pressure: this fracture ought to

unite, because the motion of the foot-bone upon the fleshy sole is very imperceptible, being strengthened by the horny sole, enclosed all round by the enchannelled flesh, and secured over all its surface, which is equally enchannelled by the inner horny surface of the hoof, which is soft and whitish.

From all I have said above, it may be concluded, that 1. The nature of the union of the fibres of the superior parts, the tension and elasticity of which is very great in the foot, ought to render them susceptible of all the unhappy consequences of compression ;

2. That it is to no purpose to keep horses who have any fractures, except in the foot-bone; the fracture of this is capable of uniting, because of its having so little motion, and is secured as I have just said.

I keep some preparations as testimonials of cases which prove, that if a nail penetrates to the joint of the foot, where matter may be formed, and by its long continuance putrify, so as to erode the cartilages of the joint, by its corrosive quality, the case is incurable.

3. When a sudden motion or effort of a horse is not sufficiently violent to fracture the articulations of the foot, the push of the coronary-bone upon the nut-bone, must occasion a strong compression upon the fleshy sole against the horny sole, which we look upon to be no more than an expansion of the nervous tufts of

'the

the muscles and tendons of the foot as we have said before.

4. That in all cases of strong compression the inflammation must ossify the joints of the foot, by the stagnation of the fluids, especially when not taken care of soon enough.

B. I have seen examples wherein, when the nut and coronary bones have been wounded by nails, or when matter has been long pent up, the cartilages of these bones have been eaten into by the sharpness of it; these are incurable disorders, even though all the other parts are found.

There can be no hopes of curing the fractures of the nut and coronary-bones, as we do the ruptured *Tendo Achillis*, for all their articulations are in continual motion; and if by chance they should unite, the horse would still inevitably be lame, by the *callus* formed in the joint, as Mr. Morand says in his report given in to the academy.

B. I presume the very structure of the foot makes it liable to several accidents. The hoof wherein the articulations of the upper parts assemble, and which, besides, has its own particular motion, has need of great strength and solidity; because all the weight of the body, bearing upon the feet, can admit neither the bones nor tendons to vary their condition.

## OESERVATION XVIII.

Having dressed a horse whose sole was drawn, from which they had cut away part of the frog for a street nail that had affected it ; being almost cured, as he lay along, he had a cut of a whip given him ; he started up but was lamed by the sudden spring in rising. I thought at first that it was occasioned by the pressure of the coronary-bone against the nut-bone ; but about ten days after the accident, a humour appeared about the middle of the foot ; I then thought the nut-bone might be fractured, but the humour penetrated deeper ; I observed the nut-bone intire, but the tendon ruptured, and the lower part properly attached. In five or six days more this part of the tendon came off piece-meal from its adhesion, and laid the nut-bone bare. I used the *Fioraventi Balsam* \* in my dressings for three months which succeeded ; what gave me hopes, was my having seen some horses, whose tendons were cut across through ignorance, recover ; I had a mind to know how the upper part of the tendon could reunite at its insertion upon the foot-bone, for this horse was cured. And an accident happened by which he died eleven months after, which gave me an opportunity of dissecting his foot ; when I found the tendon ossified with

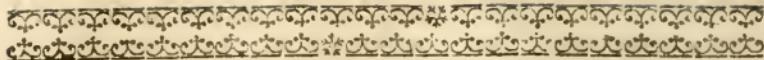
\* A vulnerary balsam, like the Friars Balsam.

the nut-bone, and this with that of the foot, so as that these three parts were united, and the coronary-bone had preserved the freedom of its motion in the joint. The horse was no longer lame, but in walking inclined a little upon the heel.

### OBSERVATION XIX.

A horse, upon whom the extirpation of the frog by the thread was performed, had the *Tendo Achillis* much injured; I could not well tell whether it happened from cutting out the thread, or from the acrimony of the topical applications; the tendon however was destroyed as that mentioned above, the nut-bone was laid bare, and the tendon putrefied at its insertion. After his cure was compleated, he died in five or six months. And I found the nut-bone covered, by a kind of ligament, all over that part which was connected with the upper part of the tendon: this new tendon was as a ligament, and adhered to the nut-bone, which was ossified to it; but it was more than twice as thick as in its natural state. It remains to know whether this excrescence proceeds from the tendon, or from the covering of the cellular membrane or from other membranes; but it is time and observations which must lead us to the knowledge of this.

R E F L E C-



## REFLECTIONS.

IN reflecting upon the various motions a horse makes, and upon the structure of his foot, we cannot be surprised to find this part liable to so many accidents. Experience shews us that for one horse who is lamed in the haunch or shoulder, an hundred have it in the foot, and that the knowledge of this part merits all our attention: I am of opinion these accidents happen chiefly to draught-horses, and not to those of the saddle; I also think that it is the different attitudes of a horse's foot overcharged at the same time with the weight of his body, that cause the different fractures of the coronary and nut-bones; for when the foot has not a direct position, the joints are twisted, as when a horse treads upon the point or toe of the hoof, the upper and inner part of the coronary-bone, which is in an oblique position, pressed in that state by the burthen of his own body, is forced to yield on one side, and rise on the other, its lower and back part, which now rises, drives the nut-bone against the *Tendo Achillis* which sustains it, the tendon presses in its turn against the fleshy sole, which is also compressed against the horny sole, which is its point

point of support; the tendon, coronary, and nut-bones become fractured upwards and backwards by the pastern, which also had an oblique position, and downwards and forwards by the foot or coffin bone, which here acts as a wedge.

The nut-bone is sometimes fractured by the lower and back part of the coronary-bone alone: but although these bones are fractured in the manner I have just mentioned, at the instant a horse gives a spring, there happens no luxation of these bones, because of the manner of their being tied and secured all round by the ligaments, the tendons, cartilages, and the construction of the hoof which incloses them and all that depend on them.

In all the horses feet I dissected, immediately after these accidents, I found the *Tendo Achillis* ruptured, and had a notion that the fracture of the coronary-bone in three pieces ought always to be followed by the rupture of the tendon, particularly after the foot is pared; or that there are frost nails or raised heels to the shoes, so that the frog is thrown up from its point of support; which will appear when we treat of shoeing.

We distinguish fractures of the coronary-bones in raising the foot by the lower part; the foot must be drawn forward, and pressed upon the coronet with the thumb, and if there is a fracture, a rattling will be perceived;

when

when the tendon is not ruptured, it sustains the bones ; and, as it is their point of support, the noise is less sensible, but it is better distinguished when the tendon is divided.

It is to be observed, as to the fracture of the foot-bone, that this bone is in a manner immoveable in its place, supported in its plane by the horny sole, and in its circumference by the sides of the hoof, which keeps it universally firm every way.

I never saw this bone fractured but once, and believe it curable, and what made me of this opinion was, that I happened to attend a horse who had the foot-bone split in two, quite through, by treading on a piece of sharp iron ; and he was cured of it. A saddle-horse has a different attitude and manner of treading from that of a draught-horse ; the former always has the articulated parts of his foot in a perpendicular direction, and in their proper situation for action ; whereas the draught-horse is accustomed to have these parts often in an oblique position ; and convenient for the attitude necessary in drawing a carriage ; and accordingly a stone or fault in a pavement, happening under one side of his foot, which is thereby inclined to the other, the pressure of the coronary-bone charged with the whole weight of the body will be very capable of causing this kind of fracture.



THE  
M E T H O D  
OF CURING  
PRICKS and other ACCIDENTS  
That happen to HORSES FEET.

PLATE II. upon all the lines.

FIGURE I.

**I**F a nail has only pierced the horny sole, and but lightly touched the fleshy sole, there is nothing to do.

But if there is room to suspect the bone of the foot D figure 3. is touched ; a large opening must be made, in order to prevent drawing the sole, by facilitating the exfoliation.

If the nail has penetrated to the insertion of the tendon 10. figure 4. great attention must be paid to it, dressing it the oftener, that the tendon be not injured; if it passes into the concave part 4. of the foot-bone figure 5. an exfoliation will come on, without any bad consequences, provided matter be not left any time to destroy the ligament 7 upon the line R figures 1. 2. 3. 4. If the nail has not passed to the tendon, the horse will grow well without a necessity for drawing the sole; but if the tendon is wounded the sole must be carefully drawn, because the synovia is discharged. If the nail has penetrated to the ligament 7 fig. 5. he must be dressed lightly every day rather twice than once, taking care not to confine the tent, nor let the matter remain in any time, lest it might erode the cartilaginous parts of the nut-bone and destroy its ligaments. When the part is to be laid open, a channel'd director must be introduced to conduct the point of the bistury, in order to make a perpendicular opening, and not a transverse one, because the tendon might be cut across, which would not coalesce again, and great mischief might be produced.

Upon the line B. figures 1. 2. 3. 4. the same manner of proceeding must be used, as is marked upon the line R. but if the nail is gone up to the nut-bone 3. figure 5. it is incurable, because this little bone cannot exfoliate, and because

because the cartilaginous part of it is destroyed as soon as injured.

Upon the line S figures 1. 2. 3. 4. the same must be observed as at the line R. but if it reaches to the ligament 8. what is mentioned for the line R. must be followed, because there will be danger of corroding the lower cartilaginous part of the coronary-bone, which in this case would become incurable.

Upon the line T. there is danger only of the cartilage 2. figure 3. of which I shall make some mention; if the nail passes into the frog B. figure 1. so as not to reach the tendon, nothing comes of it, even though it penetrates through to the pastern. I have made horses walk in this case, without confining them to the stables; but if it has touched the tendon, we must proceed in the method observed before. If the nail has touched between the line A. and the line R. and that it has penetrated to 4 plate 3 figure 3. it may have pricked an artery; in which case a proper pledget must be applied in order to compress the part and stop the blood.

For all these operations the balsam of fioraventi or spirit of turpentine must be used, and the dressings prepared as we shall mention them for drawing the sole; but care must be taken when it is to be drawn, that the horny sole be not too strong, and if it be so, to pare it well that it become more flexible; otherwise, in bearing with the spatula upon the edge of the

hoof, we should run the risque of forcing and separating it from the enchannelled flesh, which would produce a dangerous inflammation, of which I have seen some examples. You must observe not to raise the fleshy sole with the horny sole, nor to smear it over, as has been done, for it prolongs the cure; but every able practitioner knows how to avoid these kinds of dangers. When the cartilage must be cut away figure 7 and 8 plate II. if it be spoiled, part of the wall or hoof which covers it must also be taken off, as also the enchannelled flesh represented at figure 7. and then the whole cartilage without reserve; for if any part be left, although sound, it soon becomes morbid, and notwithstanding all our endeavours, we should be obliged to come to a second operation. The ligament which joins the bone of the foot to the coronary, and the capsula that contains the synovia of the joint must be carefully avoided, for touching these parts would render the disorder incurable, as if the lower part of the coronary-bone was injured figure 1. Plate III.

In order to remedy and assist this amputation the sole must be drawn, if there be any matter under it, on the diseased side; but if not, it may be let alone; for the first and second dressings good firm dossils must be made, some little some big; the small ones for the bottom of the wound, the larger ones for the outer

outer part gradually enlarged, which must be dipped in oil of turpentine ; afterwards the dos-fils must be armed with common-turpentine, and a good ample bandage put on to compress them, so as to prevent the flesh from rising above the hoof. As for the future dressings they need not be so closely confined ; in this case all softening remedies are good, and the whole difficulty of this amputation lies in the cutting, and the management of the dressings.

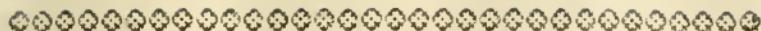
I have observed that although the operations made upon the fore feet, be never so well performed, especially if the hoof be strong, and however well cured, the horse will sometimes continue lame ; which never is the case with the hind feet ; this is a fact which perhaps we may in some measure account for.

If what is marked above be not punctually followed, and the cartilage should be taken off piece-meal, either by caustics, the actual cautery, or cutting, we risque keeping the horse a long time upon his litter ; which retains the matter, spoils the capsula and ligament, and often destroys the animal.

The dissection of the feet of two horses has taught me an exception to this extirpation of the cartilage abovementioned : It happens sometimes by an extraordinary conformation, that the horse has little or no cartilage upon the apophysis of the foot-bone, and that it is a

true elongation of the same bone, which by its consistence or hardness very well resembles the form at the coronet of the foot. He that is acquainted with his subject will in this case distinguish the want of the cartilage, in pressing the coronet, by the moveable resistance of the bone; in such circumstances it is to be supposed that the quarter of the hoof must not be cut away, but a simple opening only must be made on the upper part of the apophysis in order to wait the exfoliation of the carious bone. If it happens that, contrary to nature, this bone is edged by a thin cartilage, the said part or quarter must no more be taken off than in the case above, for the corroded part will separate by being treated in the above manner, and will come out at the opening made above.





E X T R A C T  
O F T H E  
R E G I S T E R S  
O F T H E  
A C A D E M Y O F S C I E N C E S.

*January 20, 1750.*

WE have, by order of the Academy, examined a manuscript of the Sieur la Fosse, farrier of the king's stables. The author sets forth, that having had frequent opportunities of dressing lame-horses, and not finding the cause of their lameness in either the upper or middle parts of their limbs, he looked for it in the feet; and that a small tumor which he observed, pointed out the seat of the disorder; the dissection further demonstrated that the coronary-bone was fractured.

After this first observation the said Sieur la Fosse made several others of the same kind; and what is singular, is, that he asserts this fracture is made without any great effort of the horse: and that he saw one put to a voiture, fracture the coronary-bone at the instant he was ready to set

off; those also who have carried their horses, affected in the same manner, to him, have assured him that the least false step has occasioned it. The Sieur la Fosse remarks another singularity, which is, that the coronary-bone is generally divided in three pieces nearly equal. Perhaps the reason of this may be drawn from the consideration of the manner in which the coronary-bone is joined to the pastern and foot-bones, by their strong ligaments, which being three in number, each seems to have retained its part of the bone, and favoured its division into three parts.

The discovery of this disease, which has never been treated of before by the writers of anatomy, medicine, or surgery, does not lead us to the manner of curing it, because it is absolutely incurable; on the contrary it serves to convince us, that if it was even possible to keep the bones together so as to favour their uniting, the fracture being in a joint, there would still remain an ankylosis or callous, which would render the horse unfit for service.

But the Sieur la Fosse's observation is notwithstanding of very great use, for it shews us the impossibility of curing a disease that was always thought curable from their ignorance of the matter, and consequently he has found the means of sparing to the owners of horses, taken lame, the expences of a cure attempted in vain. He further knows how to distinguish when the coronary-bone is fractured or is not;

although

although there may be no visible appearance of the disease, and the effort wherein the coronary-bone resists the fracture, indicates the manner of cure, when the bone is not broken, and also that the horse ought to feel in this effort very great pain, when he strains the fracture. We cannot avoid giving the Sieur la Fosse due praise for his zeal and capacity in his endeavours to perfect and extend the knowledge of his profession. We think this memoir merits being printed among the collection of the papers communicated to the academy.

Signed, MORAND, FERREIN.

*I certify the present extract to be conformable to its original and to the judgment of the Academy. Given at Paris Feb. 1, 1750. Signed GRANDJEAN DE FOUCHY, perpetual secretary to the Royal Academy of Sciences.*

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EXTRACT of the REGISTERS  
OF THE  
ROYAL ACADEMY OF SCIENCES,  
Of 23 August, 1752.

M R. Morand, who was appointed by the Academy to examine the Hyppiatric \* observations of M. la Fosse, farrier to the king's

\* Relating to Horses.

stables, upon six diseases of a horse's foot, which appear to have never been known to authors, having made his report, the Academy judged that these diseases were clearly described, that the observations made in consequence were very judicious, and that the whole is rendered still the more useful as it is accompanied with anatomical plates, wherein the bones and adjacent parts are better represented than anywhere else ; this memoir is judged worthy to be printed among the pieces communicated by foreigners.

Paris August 31, 1752 ; signed GRANDJEAN DE FOUCHY, perpetual secretary of the Royal Academy of Sciences.





A

T R A I N

O F N E W

Experiments and Observations

U P O N T H E

G L A N D E R S.

**T**H E Glanders, properly so called, is an inflammatory disease which has its seat in the pituitary membrane, as I have explained it in my treatise of 1749, to which I refer the reader.

In order to be well acquainted with this disease, it will be necessary to distinguish in it three different periods : to wit, its beginning, its middle and its end. In each of these times it has a different name, in the first it is called a menacing

menacing or impending glanders ; in the second a confirmed glanders ; and in the third an inveterate glanders. Three symptoms must also be known in this disease.

1. The inflammation in the pituitary membrane.

2. A swelling of the glands under the nether jaw.

3. The running of the glanders properly so called.

These three symptoms are mutually caused by one another : the first produces the second ; the second produces the ulcers, whence proceeds a running of the nostril on the diseased side.

In my treatise of 1749, I called a gland, which the inflammation of the pituitary membrane causes to swell, the *sublingual Gland* ; but it is only a lymphatic gland, the canals of which, after sending out several ramifications, go to the maxillary gland, and then to another lymphatic gland placed under the parotid, from which it divides two large branches which accompany the trachea in its whole length, on each side ; then again passes between the two bronchia, about two inches and half from the aorta, into two lymphatic glands ; there they part in order to cross them, and at last terminate in the *Vena cava*.

As to the sublingual glands they are situated at the symphysis of the chin.

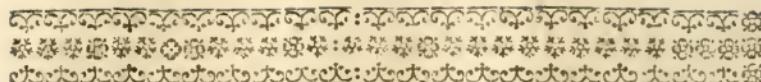
B. Although

B. Although I was certain the inflammation of the pituitary gland was the first symptom of the glanders in horses, yet in order to ascertain it to myself I made the two following experiments.

I injected one nostril of a sound horse with a certain liquor. The pituitary membrane became inflamed : this inflammation caused a lymphatic gland under the jaws on the same side, to swell as I had foreseen ; the inflammation of this membrane produced ulcers, whence the snot or matter of the glanders run through the same nostril.

I again injected both nostrils of a sound horse with the same liquor ; the pituitary membrane inflamed, made the lymphatic gland on both sides swell ; and the snot run from both nostrils in a little time ; which confirmed me in the opinion that the inflammation was the first symptom of the glanders properly so called : that the glands swelled under the jaws was the second, and the running the third.





# O B S E R V A T I O N S

U P O N

## Glander'd H O R S E S.

A F T E R having trepanned an old horse in 1749, and dressed him, they put him to work ; and eighteen months after he was knocked on the head. I saw by dissecting his head that the pituitary membrane was grown 6 or 7 lines thick, and ossified to the neighbouring bones ; it had acquired this thickness and consistence by the stagnation of the lymphatic juice, caused by the inflammation and the spreading of the ulcers.

2. A horse received a kick of another horse, which broke part of the bone of the maxillary sinus ; having examined the wound, I found it was not mortal ; but as the sinus was injured, and the pituitary membrane inflamed, I did not doubt but the glanders would come on, and it was not long before the effect confirmed my suspicion. The glands of the jaws were swelled on the morbid side, ulcers were formed on the pituitary membrane, matter flowed

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ed thro' the nostril, and this discharge is the glanders properly so called. I made frequent injections into the nostril, the discharge ceased in four months, the swelling of the gland was discussed, the injection cleansed the lower part of the maxillary sinus's, and that of the cornets, which hinder the matter's lying in them, and a thorough cure was made. This horse belonged to Madam Fondu, a mistress-carrier, in the Faux-bourg Saint Honoré.

All the authors that have wrote upon the diseases of horses seem to have copied one another, to maintain that the glanders was a discharge accompanied with a very offensive smell; I never found that the glanders had any ill-smell of itself, but it may when the matter is confined in the maxillary sinuses, or that the aliment has insinuated itself, as I have observed it, by the chinks of old broken jaw-teeth and infected the parts.

I have again found horses whose glanders have stunk very much, but then they have had the strangles with decay or farcy.

I have also seen some with whom the running proceeded from a putrefaction of the lungs, together with the glanders; and others with whom the smell proceeded only from the malignance of the strangles which they discharged.

4. I saw a horse belonging to a poor man who worked him in an inveterate glanders for six years; and at last he was knocked on the head

head on account only of his great age. I opened this horse to see the state of the viscera and found them all in a sound state, as well as the other internal parts, except the pituitary membrane which was thickened by ulcers of four or five lines broad, as well in the frontal as maxillary sinuses.

It is known that a horse with the glanders properly so called can communicate the disease to other horses ; but this disease will also be catched from any cause capable of inflaming the pituitary membrane. For example, a horse will often become glandered, if after swimming him he is left in the cold, or his nose exposed to the wind ; for in two hours the glands under the jaws will be swelled, and the nostrils be filled with a viscid mucus.

I have had horses brought to me who had catched cold thus in the pituitary membrane, and could perceive by their glands they were threatened with a confirmed glanders ; I bled and cooled them, and cured them in a very little time.

And I have since observed horses thus affected in the glands from the same cause, for which I propos'd the same treatment by way of prevention, became absolutely glandered for want of that care.

In order to prevent these diseases, when horses are hot, they must not be let to grow cool without action, and therefore they should be walked gently after running, to hinder their suddenly

denly taking cold. If they cannot be walked about, their noses must be covered to hinder the first sudden ingress of the cold air ; their tails should also be turned towards the wind, to prevent its affecting the pituitary membrane, and also care should be taken that the delicate texture of this membrane, so exposed to the immediate contact of the air and wind, may not have too sudden a change from heat to cold.

But if a horse has been affected in the glands for a considerable time, and has had a discharge from the obstructed side without coughing, the glanders is confirmed even tho' he has a good appetite, and every other sign of health. Emollient decoctions must be thrown up the nostrils, being careful to push them to the frontal sinuses, and to repeat them three times a day for a week ; if the running continues, it will be very proper to use fumigations, which would come more into practice, if their good effects were better known.

To fumigate is to make a horse receive the vapour or smoke of certain medicines thrown into the fire or upon a red-hot iron. And this fumigation produces different effects, according to the different composition made use of.

For this purpose I thought of a kind of box with a tube fixed to it, which may be put into the nostril of the horse ; this box has the advantage of conveying the vapour as intended,  
which

which by the common method is mostly wasted. The mechanism of this box is too simple to need a particular explanation ; the bare description of it is easily understood. After proper injections and fumigations, the horse must be walked about without heating him, taking care to give him nothing but bran, and keep him warm in the stable. There is no answering for the cure, for that depends upon the stubbornness of the disease. But if the symptoms be pursued with attention, and we undertake it in time, the glanders may be cured.

If the gland is of any standing, and the horse discharges a bloody matter, and another gland appears to be affected on the other side the jaw, with difficulty of respiration, we must suppose it proceeds from the thickening of the membrane : when the glanders is inveterate the horse must be trepanned, as I have mentioned it in my treatise of 1749 ; for it is the only method to prevent the stagnation of the corrosive humour.

Suppose two horses, one glandered the other sound, at the same manger, if they are tied up so as that the sound horse may not receive the breath of the distempered one, he certainly will not be infected.

After having explained what is a confirmed glanders, I shall treat of six other kinds of discharges by the nostrils, of which four are incurable.

The

The first of these four proceeds from the lungs when they are affected, and therefore may be called the pulmonary glanders: the second is called the wasting glanders; the third the glanders with malignant strangles; and the fourth the farcy-glanders.

The pulmonary-glanders proceeds from one or more abscesses formed in the lobes of the lungs, the purulent matter of which gets into the bronchia, comes up the Trachea, passes through the nasal cavities, and is discharged by the nostrils like a whitish liquor, sometimes appearing in lumps or grumes. In this case the horse runs at the nose without having the glands affected; and therefore what he discharges cannot be accounted the true glanders. If the horse be young, he may be relieved by making him work a little; pectorals must be administered, and he must be turned to grass every year.

That humour which I call the wasting humour usually seizes a horse at the end of diseases caused by too hard labour, which have been thought cured; a defluxion is made upon the lungs which produces a whitish humour, sometimes tinged with yellow, which is discharged by the nostrils, he eats and drinks pretty well, but notwithstanding he runs out of flesh.

The strangle-glanders produces humours which nature is not able to discharge, and they

fall upon the lungs, where they form abscesses ; these humours take their course also by the nostrils, and sometimes in coughing by the mouth ; and the horse gradually perishes.

The farcy-glanders is so acrimonious a humour, that it seizes, at the same time, both the lungs and pituitary membrane ; making more havock than the three other kinds already described.

The three first kinds, as I have described them, are not catching, except when the humour has acquired an acrimony by length of time, which passing by the nostrils is detained in the maxillary sinuses, inflames the pituitary membrane, and swells the glands ; a sure prognostic of the true glanders.

But the fourth, which is the farcy kind of glanders, being more of an eroding nature, is apt to ulcerate both the lungs and pituitary membrane, and is consequently infectious.

It remains to mention the two other kinds, the one which proceeds from a horse's being over-heated ; he coughs, and first discharges a limpid fluid, and after, a whitish matter ; because the cold air has laid hold on the pituitary membrane, has condensed the lymph in the small vessels, which causes an inflammation, and swells the throat, larynx and lymphatic glands.

The horse sometimes as he coughs discharges the matter from his mouth, and when the cough

cough ceases, and that he still continues to discharge it for fifteen or twenty days, that the gland under the jawhardens rather than diminishes ; this running is suspicious and sometimes degenerates into a true glanders ; and therefore, as soon as a horse is found to be overheated, he must be blooded, kept to white drink, kept warm, and not worked too much ; but if he continues ill for fifteen or twenty days, he must be fumigated or injected, as we have mentioned it before.

The sixth kind of discharge is the strangles, which every horse ought for his health's sake to discharge. This is a humour which circulates in the mass of blood to a certain age, which nature endeavours to throw off. It discharges itself in different manners, and that which is least fatiguing to the horse, is when it forms an abscess between the jaws without taking its course by the nose : It sometimes is thrown upon different parts, where it produces different effects according to the disposition of these parts. For example when it falls upon the throat, all the part is swelled, the arteries are compressed, the blood is impeded, an inflammation succeeds, and an abscess is formed.

In order to remedy this evil, the horse is to be kept warm, and as soon as the swelling is perceived, it must be dressed with a proper medicine to encourage the suppuration of the abscesses, which sometimes breaks of itself ; but it is more eligible not to wait for this, but to open it in

order to discharge the malignant matter with the pus, and the horse does well. This is what I call a mild kind of strangles.

The strangles which discharges by the nostrils produces also different effects, according to the parts affected.

At first the horse begins to be dull and heavy, carrying his head lower than usual, and sometimes falling off his stomach; he has sometimes also a little cough, and the jaws swell a little, by the inflammation.

At different times several small glands seem obstructed, and in a small time after, a discharge of the nostrils follows of a thick kind of glanders more or less.

It often happens too that the nostrils run, without any swelling or obstruction about the jaws; this first species of strangles goes off frequently by nature, it is however necessary to give her some assistance; wherefore the horse ought to be kept warm, and some cordial medicine should be given him in order to promote the expulsion of the humour.

When the humour falls upon the lymphatic parts of the larynx, it causes the same inflammation of all the parts of the pituitary membrane, and so straitens the respiration of the horse that his breath can scarce move the flame of a candle held to his nose; and as this animal respires only through the nostrils, he is forced to rattle in the throat. To assist his breath, a piece

piece of wood ought to be put into his mouth, in order to keep it constantly open, and favour the discharge of the flegm caused by the inflammation of the parotid and maxillary glands; afterwards the humour of the strangles is thrown off by the nostrils, which sometimes has an ill smell.

And as I have remarked that even this way is not always sufficient for the discharge of the quantity of humours that the inflammation causes, one may expect that the humours will necessarily be thrown under the jaws, or on one side; this abscess must be opened to assist that discharge already begun by the nostrils, and be he never so ill he will by this means be cured; but if such a deposit of the humours does not form an abscess, it is to be feared it will fall upon the viscera, and the case is full of danger.

In order to relieve him in this case, cordials must be given him to promote perspiration; but when all the passages are obstructed, as well for his drink as for respiration, a quantity of oats must be boiled in vinegar, put into a bag, and applied to the region of the kidneys, covering him up warm, and the perspiration, which this remedy produces, will promote the expulsion of the humours.

What I have just explained plainly shews that this strangles although mild enough in itself, may become very dangerous with respect to

the functions of the part affected, especially when the inflammation seizes the œsophagus and about the larynx ; for it often happens in this case, that the horse discharges his meat through his nostrils when he cannot swallow it.

These kinds of strangles are the most laudable of all ; I call them laudable because it is necessary for the health of a horse that he has and discharges them ; which if he does not, the humours which cause the strangles are apt sooner or later to fall upon one or more parts of the body, where it may form tumors or abscesses, and that even upon the viscera, which we then call the bastard strangles, or malignant strangles, as I have called them before.

It sometimes happens, though but seldom, that these two kinds of strangles seize a horse at the same time ; that is, that he discharges the matter both from an abscess, and by the nostrils. I do not mention another, seventh, kind of glanders, which horses throw off by the nose, and sometimes even at the mouth when they cough, like the whites of eggs.

I have opened horses in these cases, and found that this kind of glanders was stopped, and fell upon the upper part of the aspera arteria, from whence it separates and descends without any hindrance by the nostrils.

By opening horses who discharged a kind of glandered matter both by the nose and mouth, caused

caused by an inflammation of the throat, I found that it was caused by a defluxion upon the trachea; which appeared to be the effect of a quinzy; this disorder lasts two or three days and sometimes longer; the horse can scarce eat or drink, and it is known by a small swelling under the throat, which is sensible to the touch.

A horse discharged a great quantity of white thick matter by the nose for eighteen months; and when he was at rest in the stable the running stopped; but he was heard to rattle, which also ceased when they made him work; however although he was not affected in the glands they knocked him on the head. I opened him and found the pituitary membrane perfectly sound, the sinus and all the internal parts of the nose well, the viscera in the abdomen sound; but upon opening the thorax, I found a considerable abscess, where the trachea divides to sink into the substance of the lungs.

By this observation it is plain a horse may live and work a long while with an abscess in the thorax; and yet the pituitary membranes may remain uninjured by the matter passing by the trachea, cross the nasal cavities; and that we must distinguish this from a true glanders, by the rattling, tumefied glands, and the vast quantity of matter that runs off.

I have said before that it was necessary a horse should discharge the strangles at a certain

time, for the good of his health ; in this case it is customary to separate the sound horses from the diseased ones, because it is infectious.

I am not of the opinion of those who separate horses with the strangles from such as have not yet had it, in the fine season of the year ; on the contrary, I turn them together in order to make them catch it of one another, to avoid the danger they would risque in not throwing off the matter of that disease.







1. 2. 3. 4. 5.

Imprime par Gentilher

## A N

## A N A T O M I C A L   T A B L E

O F A

## H O R S E's H E A D.

## P L A T E I.

BB. The boundaries of the cerebellum which is very small in a horse, as is also the brain D.

CC. The beginning of the upper part of the frontal sinus with the depressions or sinkings which terminate the lines.

D, and E. Shew a body shaped like a channelled pear, which is the ethmoidal-bone, thro' which the nerves pass which go to the pituitary membrane.

E. The beginning of the maxillary sinus.

M. The space between these two lines represents the depth of the sinus.

Note, the cells and windings are not marked here to avoid confusion.

F. This white oblique line is a bony inclosure

closure or partition which separates the sinus into two cavities.

F. G. Two other inclosures; sometimes there is but one to be found in horses.

N. The beginning of the cornets or horns.

O. Their duplication.

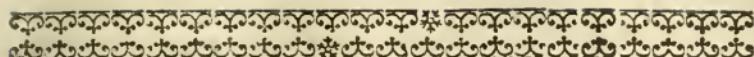
P. Their middle part.

Q. Their lower extremities.

M. The bony canal which incloses and guards the upper maxillary nerve.

AA. The partition or septum which divides the nose by a line all along to form the two nostrils.





T H E  
R E P O R T of the C O M M I T T E E  
O F T H E  
R O Y A L A C A D E M Y o f S C I E N C E S.

*Extract of the Registers of this Academy of the  
8th of January, 1752.*

**B**Y order of the Royal Academy of Sciences we have examined a new memoir of the Sieur la Fosse upon the glanders in horses.

In the first memoir he delivered upon this subject, he has established by observations, confirmed by the committee of the academy, that the pituitary membrane is the seat of this disease; which in consequence of an inflammation, ulcerates and makes an habitual discharge of a corrosive pus which renders the bones it adheres to carious; and in the memoir which is the object of this report, he improves and brings to perfection, his discovery. He distinguishes seven kinds of discharges which may come from the nostrils of horses, lays down the symptoms and

and causes of each, and shews the evil of their being all confounded under one denomination : he also makes it evident that the true glanders has its characteristics, which essentially distinguish it from every other disease that has been called by the same name.

And in order to prove that a great inflammation of the pituitary membrane is always the cause of the glanders, he has attempted to bring on an inflammation upon the same membrane by a corrosive injection ; and when the injection was only made into one side, the maxillary lymphatic glands were swelled on the same side, and that nostril only produced the discharge.

But on the other hand, when both nostrils were injected, these symptoms appeared on both sides.

The author produced, with his memoir, a section of some of the bones of the head, comprehending a portion of the maxillary and frontal bones : these pieces had on their inner surface very remarkable vestiges of a caries, and are in many places become more thick than in their natural state ; which seems to have been produced by the continuance of a superabundance of vitiated mucous matter, which softened and injured the texture of these bones.

The first memoir presented by the Sieur la Fosse was confined to a bare description of the disease, and only a proposal of a method of

cure by way of project ; but in this, he certifies that he has cured several glandered horses by means of his injections and fumigations thrown into the nostrils.

Although he has not yet found out such injections as will succeed in the greater number of cases that come before him, there is room to hope that end will yet be attained ; nor can we withhold our approbation of the enquiries he is incessantly making, in order to bring the matter to perfection.

Signed MORAND and BOUVARD.

*I do certify the present extract to be conformable to his original memoir, and to the judgment of the academy. Paris January 12, 1752. Signed GRANDJEAN DE FOUCHY, perpetual secretary to the Royal Academy of Sciences.*



## REMARKS

ଶ୍ରୀମଦ୍ଭଗବତପ୍ରକାଶନ ପରିଚୟ ପରିଚୟ ପରିଚୟ ପରିଚୟ  
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## R E M A R K S.

**D**R. Brachen an English physician has wrote a treatise on the diseases of horses ; and has also translated my treatise upon the glanders into English. The following is an extract of what he says about it.

“ I agree with Mons. La Fosse that the seat  
 “ of the glanders is in the pituitary membrane,  
 “ and not at all in the viscera ; that drenches are  
 “ of no manner of use in this case ; and that  
 “ injectious thrown into the sinuses is a judi-  
 “ cious practice.”

THE TWELFTH CHAPTER  
OF MR. BARTLETT'S BOOK  
UPON THE  
DISEASES OF HORSES,

*Being this author's doctrine of the Glanders, which is translated by the Sieur la Fosse into French in this work.*

THE cause and seat of the glanders has till lately been so imperfectly handled, and so little understood by the writers on this distemper, that it is no wonder it should be ranked among the incurables: but a new light having been thrown on this whole affair by the study of M. la Fosse, the King of France's Farrier, who has been at the pains to trace out, and discover by dissections, the source and cause of this disorder; we hope the method he has proposed, with some further experiments and improvements, will soon bring to a certainty of cure (in most cases at least) a distemper so dangerous to our horses, and that hitherto has eluded the force of art.

Before

Before we make mention of this work, which has the approbation of the Royal Academy of Sciences, it will not be unacceptable to our readers, we apprehend, to have a more particular account of the symptoms of this disorder than M. la Fosse has laid down, that we may the better judge of the merit of our author and his discoveries.

The matter then discharged from the nostrils of a glander'd horse is either white, yellow, or greenish, sometimes streaked or tinged with blood ; when the disease is of long standing, the matter turns blackish, and becomes very fetid, and is always attended with a swelling of the kernels or glands under the jaws ; in every other respect the horse is generally healthy and sound till the distemper has been of some continuance.

From these symptoms and some observations made by Bracken and Gibson, it is plain they were not absolute strangers to the seat of this disorder, though they neglected pushing their enquiries to the fountain-head, and consequently were at a loss to know how to apply the remedy to the parts affected.

But our author after examining by dissection the carcases of glander'd horses, and making a strict scrutiny into the state of the viscera, assisted for that purpose by ingenious and expert anatomists for ten years together, affirms this disease to be altogether local ; and that the true seat of it is in

in the pituitary membrane, which lines the partition along the inside of the nose, the maxillary sinuses or cavities of the cheek-bones on each side the nose, and the frontal sinuses or cavities above the orbits of the eyes ; that the viscera, as liver, lungs, &c. of glandered horses are in general exceeding sound ; and consequently that the seat of this disorder is not in those parts, as has been asserted by most authors ; nor indeed is it probable it should ; for how could such horses preserve their appetite, their good appearance, sleek and shining coats, in a word all the signs of health for many years together (which many glandered horses are known to enjoy) with such distempered bowels.

But on nicely examining the heads of such horses he found the cavities abovementioned, more or less, filled with a viscous slimey matter, the membrane which lines both them and the nostrils inflamed, thickened, and corroded with sordid ulcers, which, in some cases, had eat into the bones. These sinuses or cavities will be better understood by referring to the annexed plate.

He observes that when glandered horses discharged matter from both nostrils, both sides of the membranes and cavities were affected ; but when they run at one nostril only, that side only was found distempered.

It is a curious remark of our author, that the sublingual glands, or the kernels situated under

der the jaw-bone, which are always swelled in this distemper, do not discharge their lymph into the mouth, as in man, but into the nostril; and that he constantly found their obstruction agreed with the discharge; if one gland only was affected, then the horse discharged from one nostril only, but if both were, then the discharge was from both.

He sometimes, though rarely, found the bony partition of the nose carious and rotten; but that the spongy bones about this part must suffer from the acrimony of matter long pent up, is not at all to be doubted, though the more solid ones may escape.

The seat of this disorder thus discovered, our author with great ingenuity has paved the way for the cure, by trepanning these cavities, and taking out a piece of bone, by which means the parts affected may be washed, with a proper injection, and, in fine, the ulcers deterged, healed, and dried up.

This operation he has performed on three horses, one of whom discharged from one nostril only, and the third from both. The two first he trepanned on that side of the head which was affected; and to the other he performed it on both: and found that the wound and perforation filled up with good flesh in twenty-six days, and that the horses suffered no inconvenience from the operation. Though after this experiment they were knocked on the head.

The

The directions and orders of the civil government of France, which hindered people from keeping glandered horses long, prevented M. la Fosse repeating his attempts, and pushing his experiments further; but it is to be hoped that so useful a project will be pursued to its utmost extent, as it seems so promising in the execution, and is so important in its consequences: to which end we shall beg leave to animadvert upon what has been said, and offer our opinion both in relation to the disease, the operation, and the manner of conducting the cure.

The original source and cause then of this disorder seems to be an inflammation of the glands and membrane that lines the nostrils and these cavities; which if not dispersed in time, will form matter and ulcerate and erode the bones, for want of a free discharge to unload the cavities; and of proper applications to cleanse and deterge the ulcers: violent colds or a feverish translation settling here, may also occasion the same complaint, and are commonly the general causes.

There is a disorder in men called *Ozæna* that has great similitude to this in horses, and arises often from an inflammation in the maxillary sinuses, or cavity of the cheek-bones; from whence ensues a collection of matter: which when the cavity is full, or the head properly inclined, runs over into the nose, and would constantly discharge thence like a glandered

horse was the head continued in the same position. The surgical cure is the taking out one or more teeth from the upper-jaw, and perforating the cavity with a proper instrument in order to make a depending orifice for the matter to flow through; and to make way for syringing the parts affected with proper injections, which in this case are thrown thro' the cavity into the nose.

The similarity of these two cases, with the method of cure, and the success attending the surgical treatment, (which was first invented by our countrymen Drake and Cooper) undoubtedly gave the first hint for trepanning and syringing these cavities in horses: and it is most probable, that when the operation is attempted in time, before the bones become rotten, it will be attended with equal success; but after opening the cavities, should it by probing be discovered that the bones are in that state, the best way then would be to dispatch the horse, to prevent unnecessary trouble and expence.

The parts fixed on for applying the trepan are pointed out in the plate, and the manner of sawing out the bone will easily be understood by a view of the instrument, and the explanation annexed.

The perforations being made, our next business is to prevent their filling up too fast: as it may be necessary to keep them open for some weeks, before a cure can be effected; for which purpose,

purpose, after the use of the injection, let the upper one be filled up with a piece of cork waxed over and adapted exactly to its size; the lower one may be filled up with a hollow leaden tent, and both kept on with a proper bandage.

If this method should not prevent the granulations or shoots of flesh, from filling up so fast, as to choak up the perforation, and by that means hinder the injections passing freely; they must be suppressed by rubbing with caustic medicines, or touching with the actual cautery; as may also the bony edges; which by obliging them to exfoliate or scale off, will retard the healing.

The injections first made use of should be of a deterersive nature; as a decoction of birthwort, gentian, and centaury; to a quart of which, if two ounces of ægyptiacum, and tincture of myrrh are added, it may be as proper as any; and when the discharge is observed to abate, and the colour alter to a thick white matter, the injection may be changed for barley water, honey of roses and tincture of myrrh; and finally to dry up the humidities, and recover the tone of the relaxed glands, Bates's alum-water, or a solution of colcothar, vitriol, lapis medicamentosus, or the like, in lime-water will most probably compleat the cure.

But whoever is at all acquainted with practical surgery, well knows that without the assistance of internals, especially in glandular disorders, the cure is not so easily effected, nor rendered complete and lasting; I therefore advise a strong decoction of guaiacum chips to be given every day to a quart or three pints throughout the cure, and when the matter lessens, to purge at proper intervals and put a rowel into the horse's chest in order to divert the fluids from their old channel.

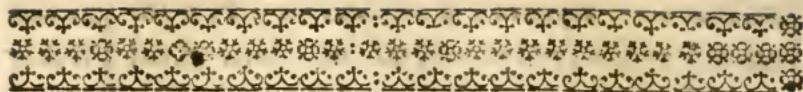
If these should not succeed, mercurials may be given with the physic; and the alterative powders with lime-water may be taken for a time, if the horse is worth the expence. Vide chap. on alteratives.

My treatise upon the glanders has been translated into English by Dr. Bracken, author himself of several treatises upon the diseases of horses, and was also approved of by Mr. Bartlet an English surgeon. My discovery made upon this disease and my method of cure have been approved of in England. But I ought to declare that I have lead Mr. Bourgelat, author of a book entitled *Elemens d'Hyppiatrique* into an error, where I speak of the sublingual glands, upon which he has expatiated with a credulity that does me honour, for which he has my thanks; but unhappily it was a mistake in me, for I acknowledged it since, and retracted

tracted that opinion that horses have no glands but under the symphysis of the chin. And I freely own that I called them sublingual glands very improperly; they are lymphatic glands that the inflammation of the pituitary membrane causes to swell, the canals of which after having thrown off several ramifications pass under the maxillary gland and fixes under the parotid; from whence two large tubes issue which accompany the trachea on each side for its whole length, and ends in the vena cava.

Mr. Bourgelat, a good anatomist, ought to have known this error, and to conclude from thence, that he should not be in so much haste to criticise as to approve.





A

# M E M O I R

P R E S E N T E D T O T H E  
ROYAL ACADEMY OF SCIENCES.

November 18, 1750.

*Upon a most speedy and infallible remedy to stop blood in large divided arteries without a ligature.*

**I**N order to stop the blood in accidental hæmorrhages of the small vessels, I had a notion to try what effect the dust of a certain wild mushroom, commonly called in France *Vesse-de-loup* \*, and botanically *Lycoperdon*, could have upon great divided arteries; in the case of accidents in bleeding, and in performing amputations of limbs; I proposed therefore to make my experiments on horses.

Having chosen proper subjects, I laid the temporal artery bare in one, and divided it transversely half way; the blood started out

\* In England puff-balls.

with



Fig. 8.



Fig. 7.

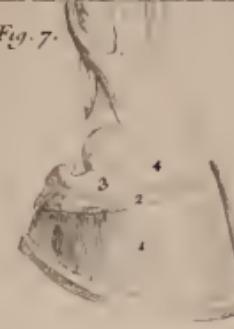
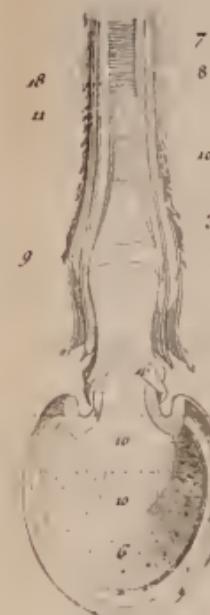


Fig. 4.



T S B R A Q

Fig. 6.



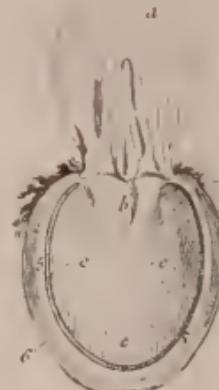
Fig. 5.



Fig. 3

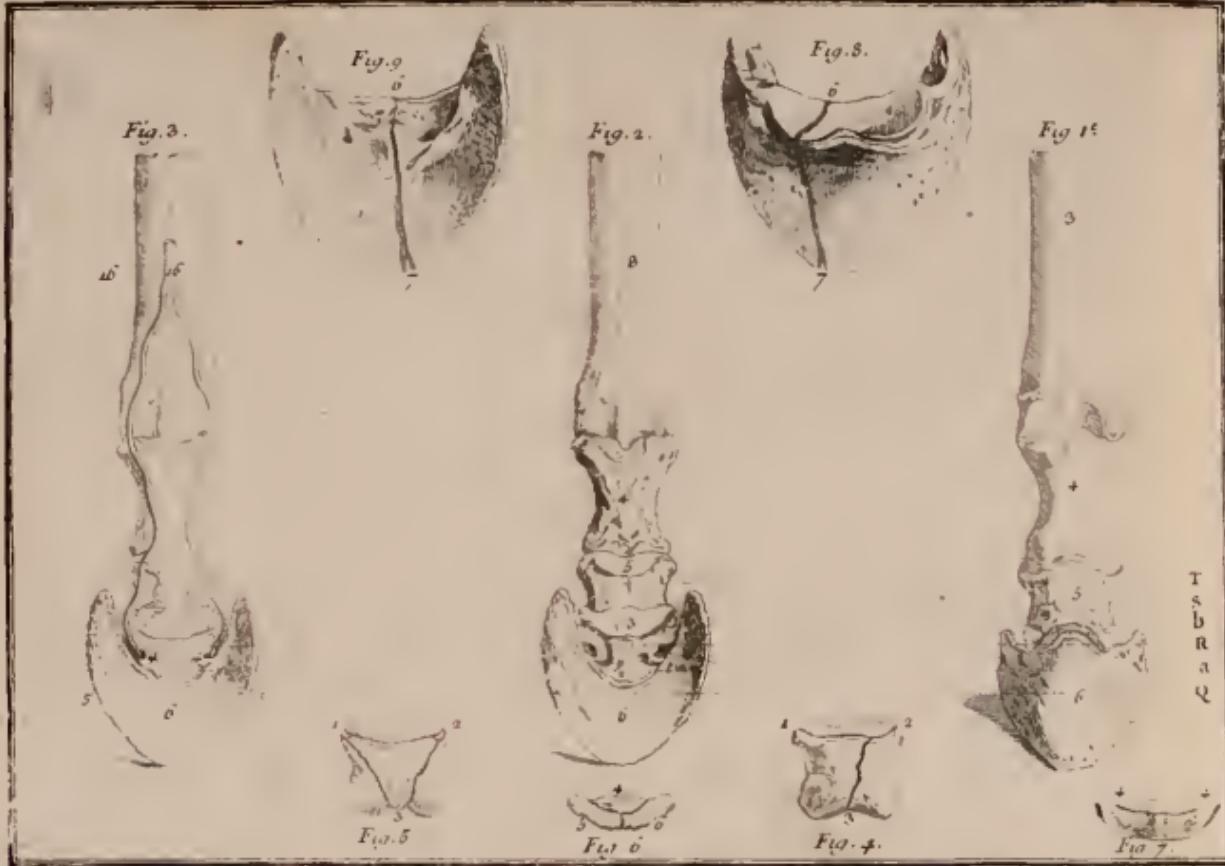


Fig. 2

Fig. 1<sup>re</sup>

T S B R A Q





with great impetuosity ; I applied some of this dust of the puff-ball, which I confined to the part, by only the palm of my hand, for about twelve or fifteen minutes ; and the blood stopped.

I pricked, in the same manner, the artery in a horse's leg ; I dressed it with the same dust, and the blood stopped in like manner.

I cut off the fore-leg of another horse at its upper part, near the thorax, and applied the powder or dust to the stump, without any other dressing than a bladder to keep it on, and the blood stopped ; notwithstanding the struggles of the horse to relieve himself, for he was thrown, in order to make the operation.

I afterwards cut off the tail of the same horse at the place of its first joint ; and the blood of the four arteries stopped like the other cases by the same treatment.

I caused this horse to be knocked on the head on the fourth day after, and dissected the divided arteries ; when I found that a membranous inclosure was formed, which was half transparent and exactly stopped their orifices, the center of each of which had a little grume of blood like a nipple.

It must be observed here that as I examined the stump of this horse while he was yet alive, I saw with great pleasure, the blood force against the said inclosing membrane, which being upon the level with the flesh, made it easy for me

me to observe very distinctly the extremity of the artery by its pulsation.

Having separated the flesh from the artery, I slit it up longitudinally, and found that the little grume of clear blood was of a firm consistence, of a lively red, in form of a cone or sugar-loaf, the basis of which adhered to the little inclosing membrane which shut up the artery without ; the point of which floated in the cavity of the vessel ; and I further found the coats grown thicker at their extremities.

At length, in order to try whether the suppuration of the wound would not open the orifices of the arteries again, which were just stopped up by the remedy, I let the first horse live, which was the more vigorous of the two, until a perfect suppuration was established, which proved that it did not, in the least respect, hinder the cicatrising of the arteries.

TO THE MEMBERS OF THE ROYAL ACADEMY OF SCIENCES,

EXTRACT of the REGISTERS  
OF THE  
ROYAL ACADEMY of SCIENCES,

*December 23, 1750.*

**T**H E Sieur la Fosse, Farrier to the king's stables, in the last memoir he presented to the academy, asserts, 1. That by applying the powder or dust of the lycoperdon or puff-balls to very considerable divided arteries in horses the blood was stopped in a few minutes ; and the arteries cicatrised by this means alone, without any succeeding hæmorrhage.

2. That about twenty hours after the application of this remedy, a membrane, or rather a pellicule, or thin skin, was observed to cover the extremity of the divided artery, with a small grume which shut up the mouth of the same artery.

3. That the pulsation of the artery was very distinctly perceived in the place.

4. That this grume was shaped like a cone, the basis of which stopped up the orifice of the divided vessel, and the point was turned inward in the vessel.

These

These are the facts which the academy ordered us to consider and verify. In order to try the experiment we caused M. la Fosse to cut off the tail of a mare as near the root as he could, the blood flew out of the four arteries with great force; he applied this puff-ball powder to the stump with a cap of a pig's bladder to keep it on; he took off this dressing in a quarter of an hour, and three of the arteries were staunched, but the fourth continued to bleed very fast; and by applying a pinch of the powder to the bleeding artery, which he kept to it only with his finger, the blood was also stopped in this vessel in six minutes.

He cut off the leg of another horse about ten inches above the knee; and as the arteries did not bleed, he handled them for half a quarter of an hour in order to force them, but to no purpose: however he applied the powder secured by a pledget and proper bandage; and there was not any bleeding for three days after, although the horse had moved himself very much, and was often put to pain after the operation. The horse was ordered to be killed, and having opened the principal artery of the stump longitudinally, we found a body of a conic figure about four fingers breadth above the extremity, the base of which adhered strongly all round to the internal coat of the artery, its other extremity turned inward into the vessel; when this conic body was macerated in water,

it

it appeared very distinctly to be a kind of membranous sack, like a funnel filled with blackish grumous blood : the internal convex surface of the sack, shewed, in tufts, a great number of granulations like those of a wound beginning to incarn ; as to the rest, all that interval of the artery comprehended within the place where the sack adhered to the divided extremity was filled with grumes of lymph and blood, without any regular order or figure, which had nevertheless some adhesions to the artery. In this case, the matter does not exactly answer the Sieur la Fosse's narrative; but there is the greatest reason to suppose that the agitations of the horse after the amputation, had interrupted the efforts of nature to form the grume ; and indeed this observation ought to be looked upon as an exception to those we shall give the following account of.

In eight days after the amputation of the tail of a young mare, there appeared no manner of hæmorrhage ; and when we directed M. la Fosse to cut off the thigh of the same mare, about ten inches above the ham, the blood spurted out with great rapidity from several arteries ; and in order to try whether an application of armenian. bole would not stop it as well as the puff-ball powder, we armed a pledget with the bole, and applied it, securing it with a proper bandage; two hours and a half after, though the animal had not stirred, the blood still issued

out; the dressings were taken off, and then the blood sprung out with great force; the aforesaid powder of the lycoperdon was applied, which was gently confined by his hand only, for six minutes, when upon taking away his hand, the crural artery only bled through the layer of powder upon the stump; but this little stream was two thirds smaller than before, by the application, but it grew no bigger though let alone for six minutes longer; then the Sieur la Fosse applied a pinch of the powder to that little stream, which he held on with his finger about four minutes longer, and the bleeding was stopped. In its place a little elevation was very clearly observed, pushing and retiring successively, and exactly corresponding with the arterial pulsation. This observation lasted a quarter of an hour, without the least hæmorrhage from any part; the stump was then dressed up with pledgets of tow, and three days after we observed at the extremity of the artery a grume which plug'd up the orifice, and over the grume a white transparent skin; when this vessel was opened longitudinally, we observed the grume intire as it was; it was formed into a cone, the base of which was to the divided end of the artery, which it closed exactly, the point or apex being turned inward, and was elongated like a stilet floating in the arterial tube. The basis projected about a line . beyond

beyond the extremity of the artery, and was fungous and rounded like a nipple, and covered with granulations like the little membranous sack mentioned before. The point had a smooth surface, and was nearly equal to the internal surface of the artery in consistence; the middle part, which might be called the body of the grume, was more red than the extremities, which had but a very faint tincture of the same colour: but it was firm, and was so strongly attached to the artery, that we could not pull them asunder without tearing, and leaving a considerable quantity of its substance behind, which constituted one body with the vessel. We ordered another amputation of a horse's shoulder, and every thing answered in the same manner, as in the former experiment, except in a few trivial circumstances; which seemed indeed to depend only upon the horse's having died twenty six hours after the amputation: the grume in this case was redder at the extremities, shorter, and less solid, nor did it adhere so firmly to the artery: but it is very plain that it wanted only the horse's living two days longer to have been exactly parallel to the former case.

From what has been laid down, it may be concluded that the Sieur la Fosse has advanced nothing but the truth; we agree, however, that the use of this powder of the puff-balls for stopping of blood was not wholly unknown, but it is not certain that the blood which the most

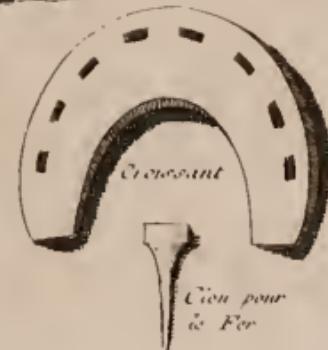
most considerable arteries could discharge, was ever attempted to be stopped by this remedy before, which it did in the space of six minutes ; this author's explanation of the formation of the grume, differs from that of Mons. Petit, it opens to philosophers an opportunity of making useful discoveries upon this subject, or at least such as are very curious ; signed

BERNARD DE JUSSIEU, and BOUVART.

*I certify that the present extract is conformable to its original and to the opinion of the Academy. Paris Feb. 1, 1750. Signed GRANDJEAN DE FOUCHY, perpetual secretary to the Royal Academy of Sciences.*







Cise pour  
le Fer



A NEW  
M E T H O D  
O F  
S H O E I N G  
BOTH  
COACH AND SADDLE-HORSES,

*In order to render them more secure upon their feet  
at all times, upon even the smoothest pavements.*

E V E R Y country has its different method of shoeing horses ; but as I do not intend to make a critical examination into either the errors or perfections of their methods, I shall only give a short account of the practice of several countries, that the reader himself may judge how nearly the method of shoeing in our time comes to perfection, or how far from it.

F

In

In Prussia they only shoe before and not behind.

In Germany they shoe both before and behind; and commonly put three cramps upon each shoe.

In France they cramp them only behind.

In England the shoes have no cramps either before or behind, and the shoes are thin, broad, and have very strong heels in order to hinder the frog's bearing upon the ground.

In Spain the heels of the shoes are thin, and partly diminished upon the heels of the horse.

In Turky the horse's heels and soles are covered with a plate which serves them instead of shoes, wherein they contrive an opening to let part of the frog come through. All these several kinds are represented in the fourth table.

As to the manner of paring the foot, it only differs according to the greater or less quantity of the soles being taken off.

It must, however, be observed, with respect to the cramps, that our ancestors put them on the fore-feet; though there is no treatise that makes any mention of it; but over the door of the church of St. Severin there is a number of shoes fixed to the wall with two cramps on each, which were certainly the shoes before the last age. Some of them had been worn and others not, but it is plain they were those in use at that time.

For several years past the method of cramps have been left off, instead of which strong heels have been brought into use; but the more able farriers perceiving the abuse of such, now keep the heels equal to the rest of the shoe.

Every nation thought themselves right, and believe so still; nor will any of them change the manner of shoeing. The foreigners who are lovers of horses, and who come into this kingdom, are a strong proof of this; for almost all of them bring with them a farrier of their own country; being strongly of opinion that their methods are preferable to ours.

But we are pretty even with them in our opinions of them, for we generally use the same precaution when we travel into their countries.

It must not be supposed that the difference of the ground, causes any manner of difference in the methods of shoeing, which I have sometimes heard mentioned as a cause; for we daily see here horses shod in the English, German, and Spanish manner, and yet go upon our ground neither better nor worse than those shod in the French method; but only that this practice is scarce better in one country than another, and that in all places it is rather a matter of fancy and custom than of consideration and reason.

It appears to me that the custom of shoeing horses was a good one, and even necessary up-

on a pavement, but it is upon their form and the manner of setting them on, that not only the preservation of the foot, but also the safety of their legs, and the ease of their motions depend.

And in effect, the more easy our shoes set upon us, the more active we are; so a large, long, thick shoe ought to have the same effect upon horses, that wooden shoes have upon us, that is, make them heavy, unwieldy, and hobbling.

Let us now observe the going, as well as the external and internal structure of a horse's foot.

The horse who draws, presses first upon the toe, then successively upon the sides, to ease the toe; and then the horse's heel yields upon the heel of the shoe, from which it immediately rises again.

The saddle or pack-horse places the toe but lightly; which is the only difference in their going; so that in both cases, the point of support is fixed neither upon the heel nor toe, but between both; which it is easy to demonstrate anatomically, figure the first, plate III.

The canon-bone 3. presses upon the pastern 4. this upon the coronary 5. the coronary upon the coffin or foot-bone 6. and upon the nut-bone 3. fig. 2.

By this disposition of the bones, we should observe two essential things, which lay open the faults in the present method of shoeing, and point out the means of being able to remedy

medy them for the future: one is that the effort of the weight of a horse does not bear either upon the toe or the heel, but on the middle between both; the other shews that the greater the distance of the sole from the ground, or from whatsoever point of support, the more the pushing of the coronary-bone upon the nut-bone, will fatigue the nerve or tendon upon which it rests, by the inordinate distension it undergoes at every step the horse takes \*.

We find therefore that in our present method, a long shoe is not only perfectly useless, but it is even very prejudicial; in the first place it will be less solid;—secondly, the horse's heels coming to sink upon those of the shoes, the longer the lever, the greater will be the drag upon the clinches of the nails at the toe; and we often see horses, having long shoes, strike them off in walking upon the best ground.

They often also lose their shoes in stiff or tough clay, for they are apt to stick the faster for being so long.

Again when the shoe-heel happens between two pavement stones, the shoe comes off.

The same thing very often happens when they pass into the doors of coach houses, which have commonly bars of iron along the threshold.

An old colonel of horse told me that horses

\* See the anatomical plates, which shew the structure of a horse's foot.

very frequently lose their shoes in passing over the draw-bridges of fortified towns, because they are strengthened with cross parallel iron-bars. He seemed convinced of the convenience of the new method of shoeing I propose.

Horses frequently too knock off their shoes by hitting the toe of the hind-foot upon the heel of the fore-shoe when they trot, especially when they are too apt to over-reach; and also lose them by happening to put one foot upon another, while in the stable, from the length of the shoe.

The longer a shoe is, and the more it covers the sole, the more liable the horse will be to fall, trip, and hobble in his walk; particularly if he goes upon a pavement, because the surface being formed of round parts, and the shoe having a large uniform hard face, he can scarce have above two or three points of support.

The English who practise this kind of shoeing take care therefore not to bring their horses upon a flat pavement without an absolute necessity. The length of the shoe causes yet another ill accident to some horses, which they feel all their lives; and it is to those especially that lie down as a cow usually does; for in this posture the fore-legs are so bent under them backward, as that the heels of the shoes wound their elbows, and cause a kind of abscess in the part.

It is thought that strong shoe-heels are an ease to the weak heels and fetlocks of horses, as if the body of the shoe was flexible enough to yield to the horse's heel, and under this notion, they raise the shoe-heel, and leave a vacant space between that and the horse's heel.

Nevertheless the direct contrary happens.

1. It is the hoof that by its flexibility yields to the shoe-heel, which is quite inflexible.

2. The thicker the shoe-heel is, and the more subject that of the horse is to meet it.

3. Instead of being eased, the horse's heel becomes more compressed, because it has always the same point of support.

Let us but remember what I have said above concerning the horny sole; that it is from the fleshy sole it receives its nourishment; that its connection and juicy parts consist in its thickness; and that it hardens, and receives less nourishment in proportion as it is thinned. We even see horses grow lame by the habit of paring the sole.

The air, when it is in this thin state, penetrates and dries it to such a degree, that if when a horse stands dry, they neglect moistening his feet, they contract, and compress the fleshy sole, so as to lame the animal.

But let us go on: what dangers does not a horse run, when his sole is almost gone by being pared too close? if he should happen to tread upon stumps, pieces of bottles, or nails,

they will easily penetrate to the fleshy sole, lame the horse for a considerable time, and sometimes for his life.

Suppose a horse loses a shoe, which often happens, when his foot's but newly pared ; he cannot go an hundred paces before he grows lame ; because, as in this state the sole is hollowed away, the horse is sustained only upon the walls of the hoof, which having no assistance of support from the horny sole, is immediately worn and battered by the weight of the horse's body ; and the sooner he treads upon any hard substance, the sooner he grows quite lame.

But this cannot happen to a horse, whose sole is left intire in its full strength ; for when the shoe happens to fall off, the sole and frog bear upon the ground, ease the walls of the hoof of part of the weight of the body, and the horse thus unshod, will pursue his journey, and come in safe and sound.

It is most certain that all horses, except such as have their feet overgrown, or such as may have a particular occasion of being shod to preserve the sole, may, at any rate, go without shoes ; and we have examples among ourselves, (without mentioning the customs of Arabia, or Tartary) of horses who are at daily work in the country, without the least need of being ever shod. But as we employ all our care and address to hollow the foot by paring it even to the quick ; and

and to form an exact fine frog, in short such an one as, we say in France, is neatly put out of hand, it is absolutely necessary to set shoes on them.

I therefore warn all lovers of horsemanship to secure their horses, as much as may be, from the perfection of such work. Perhaps it may be asked what becomes of the horny sole if it be not pared? they may be afraid of its becoming too large by its growing; not at all, for in proportion as it grows, it dries, scales, and falls off in flakes.

Again if the horny sole be left intire, there would be no fear of those inflammations, arising from the dangerous compressions mentioned in this treatise. For by its connection, thickness, and flexibility, as well as its contexture, it would seem to be wholly destined, by nature, to serve as a cushion to the fleshy sole and tendon which rest upon it; in order to break the violent shocks of a pavement, stone, or any kind of stump, &c.

There is a fact which we must also be convinced of, and that is, that a horse very seldom goes easy, or escapes being soon jaded, if the frog does not bear upon the ground; and as it is the only point of support to the tendon; if you keep it at any distance from the ground by paring it away, an inordinate distension will happen to the tendon, caused by the pressure of the coronary-bone upon the nut-bone (as we have said already)

already) which distension being repeated at every step he goes, tires it, and causes an inflammation, whence proceed relaxation, defluxions and tendinous swellings, especially after long journeys or hard riding. These accidents proceed less from the length of the journey which is the common notion than from the bad custom of paring the sole.

The common methods of shoeing have another general inconvenience upon journeys; which is that sand and gravel get in, and are ground between the sole and shoe, and again between the horse's heels and those of the shoe; and not coming out again readily, they cause compressions, inflammations, and at length a collection of matter which putrifies and ruins the cartilage, forming in this latter case, callous horny excrencences, and in the former bruises and compressions of the sole.

These last accidents are also very often the effects of a stone's being wedg'd in between the shoe heels; and although this is soon perceived because the horse suddenly goes lame, yet in endeavouring to knock it out, you run the chance of either hurting and laming the horse, or striking off the shoe.

Let this circumstance be well attended to, that the more a horse's foot is pared, the more he is expos'd to the danger of meeting such accidents: It is in the first place, depriving him of the defence provided by nature against hard

sharp

sharp bodies, which he may chance to tread upon ; and in the second place of a more important advantage both for his own, as well as his rider's sake, which is, that in not paring away the sole, nor setting on any more shoe than is necessary to preserve the horny sole, he will no more be subject to slip, neither upon the winter's icy pavement, nor upon the dry smooth one of the summer season, which I shall now proceed to demonstrate.

1. In making a horse walk upon the frog and partly upon the heel, the former being strongly rubbed and pushed against the ground or pavement, as it were, impresses itself, by the weight of the horse's body into the inequalities and interstices, it happens to meet in its way.

2. By its flexibility it easily receives the impressions of such inequalities, so as that the foot resting upon a great many more parts which mutually ease it, by multiplying the points of support, gives the animal a stronger adherence and more security upon the plane he goes upon. It may even be asserted, that the frog acquires a kind of sensation, by its correspondence with the fleshy sole, and of this with the nerve ; which though I will not compare it with what we feel in going barefoot ; yet this sensation is fully sufficient to give him proper warning of the counterpoise he ought to put his body into, for maintaining his equilibrium to keep himself from stumbling and falling.

The

. The end and design of shoeing horses could not have been aimed at upon any other account, by whomsoever first put in practice, but as a preservative and defence for the hoof as well as the sole ; but he could not think at the same time that it was necessary to pare away what he wanted to preserve by the use of the shoes, I will not even say to that excess that we use in paring them, but not at all ; because that would be to act contrary to his first principle, and destroy his own work.

This precaution could never be recommended but in cases where the horny sole is uneven, insomuch that the shoe could not bear equally upon it ; which would take off from its necessary firmness ; in such a case it may be reasonable, otherwise it would be very absurd.

I have often spoke to such lovers of horsemanship as take great care to have their horses feet well pared ; but none of them could give me any demonstration either of the necessity or propriety of it. But at length convinced by my reasons against it, I never could have any satisfaction from them, but that it was an established custom, and that it must be allowed to be by far the most genteel method.

I will offer but one word more upon this pernicious practice, which is, that the greater part of the farriers, in order to pare their horses the neater, push the buttress even to the very blood,

blood, and then in order to stop it, have recourse to a red hot iron.

When this operation is finished he returns lame to the stable : the owner asks the reason of it, but cannot be informed, because both farrier and groom are either equally ignorant, or rather equally discreet upon this article.

I will venture to say, as a fact, that if a horse loses shoes ten times a day, a farrier will as often pare his foot, so excessively obstinate is the custom, and so positively thought necessary by the generality of the farriers.

I do not take upon me to inveigh against able and skilful farriers, I have respect for these, and do them all the justice imaginable ; I only strike at that ignorance alone, which has reduced a method of shoeing, which is in itself simple, easy and useful, in its principle ; to a work which is pernicious in its use, and merely a mark of dexterity and neatness in its execution.

From what has hitherto been said, it is plain that our kind of shoeing, and the manner of our application of it, far from being serviceable to horses, ruins, fatigues, and renders them unwieldy and hobbling ; exposes them to street nails, makes them take up their limbs awkwardly, subjects them to compressions of the sole, callous excrescences, tender-footedness, and obstructions and swellings of the tendon. But by a new manner of shoeing, which will make them  
more

more alert and agreeable in their going, we shall be able to prevent the crowd of accidents mentioned ; and it is from its simplicity, and the great ease of performing it, that all its advantages arise.

I cannot but wonder others have never thought of it before, and I have, indeed, some difficulty to persuade myself, that I am the inventor ; and I am more ready to believe, that it is no more than copying that which was practised by the first artist, who thought of setting shoes on horses.

If I am right in my suspicion, its having been forgotten, proves nothing against its perfection ; because neither a good nor bad method has any more right the one than the other, to fix our inclination from varying. We grow weary of every thing ; and one, in order to improve upon the other, has invented shoes of different forms, lengths, and thicknesses, to which he has been sure to attribute many useful properties. The world, more credulous than well instructed, are easily convinced, and from hence sprung the use of some long shoes, others thick, others with cramps, at length others with thick strong heels, and in fine, others with thin ones. It is not unlikely that if the poor animals themselves were able to give their opinions, nothing of all this would be put in execution ; they would be kept to their ancient method of being shod, which being invented

vented to preserve the hoof, had certainly none of the inconveniences that attend our present method.

In order to give a striking example of this, we need only to observe a draught-horse, when he draws a loaded cart, at a time when the pavement happens to become slippery ; we shall see the pain and torment the poor animal suffers, his feet having no purchase, he attempts in vain, to claw the pavement ; every step is a slip, for which he is often whipt without deserving it ; the back, breast, shoulders, legs, and all are strained, all upon the rack ; to which may be added, the perpetual fear of the whip, at every false step he makes upon a pavement, which it is impossible to draw a load upon ; under these circumstances the horse suffers more in one league, than if had drawn ten leagues upon the road ; the foundering, inflamed lungs, fevers, and every other accident of a strained horse are the consequences, which are often attributed to other causes : but what is still more dreadful, that the very worst jades do not suffer so much as the best horses, who put all their strength forward, and yet are not the more spared for their willingness.

I should not omit mentioning here, that one of the principal reasons that determined me to seek a means of reforming the old manner of shoeing, was the difficulty that horses have to keep their feet upon the pavement of Paris in a very dry

season; the more elegant the pavement of this capital is, which is wonderfully kept in repair, and the more advantageous to the citizens, the more prejudicial it is to the horses. And the oftener the pavement is swept the more easily it grows slippery, and the more these animals are exposed to dangers. But above all we must without controul yield to what is convenient to men, and accommodate the arts to them, which made me think of this new method, I proceed to propose.





T H E

## MANNER *of* SHOEING.

**T**H E sole nor frog must never be pared, for the reasons given before; we ought to be content with only taking down the edge of the hoof, as usual, if it be thought too long; and then to set on a shoe in form of a half-moon \*; thinning the heels, and making them a little longer for such horses as have weak hoofs; for when the feet are good they must only reach the middle of the hoof.

Eight small nails made in the old way, that is, having very small heads, are incrusted in the holes which are made, as the head is, in an oblong form; the figures both of the shoe and nail are to be seen in the fourth plate.

This is the whole of the mystery; I own this method does not seem to be in taste; it is even a general reproach which they who make the trial for the first time offer me. But the greater part of those who have tried this way, continue it, they find it so advantageous.

As to the rest, if the reader does not find my reasons sufficient to convince him of the

\* See the plate of the shoes.

imperfection of the common method of shoeing, and of the advantage of the new way, I refer him to making the experiment ; assuring him he is very much mistaken, if he takes all I have said, for a simple project, which would have no other merit than to have been formed from a meer rational theory. I assert to him that my notions have more solidity, and that in praising my new method of shoeing, I declare nothing but a fact a long time ago put in execution, and confirmed by practice.

The marquis de L. O \*\*\* colonel of horse, and a lover of horses, to whom I mentioned this new way of shoeing in October 1753, knowing the structure of a horse's foot, told me he thought it an useful and good way, and that he had a mind to have his horses shod so ; in short he had it done, and tried it upon smooth pavements as well as upon ice ; and although the roads were almost impassable this year 1754, his horses never stumbled ; and he recommended to me to go on with the same method.

I have shod in this manner for a great number of houses in Paris ; the first essay was made upon my own horse, who draws my carriage to this day ; he used to slip frightfully in going, though he was shod with cramps all round. But as soon as I had shod him in my new way, he became as sure footed, as if he always walked upon good ground. I even proved in

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the last frost, of last winter, that the same horse, being shod in this manner and only two frost nails at the toe went firm and sure even upon the ice.

1. I have observed before that all kinds of shoeing went well upon every sort of ground; it is necessary however, to mention a word or two more about it.

In the German shoeing, the fashion is to have two cramps to each shoe; and is only fit for going upon the ice; upon all other grounds it is hurtful to the legs, which are raised up, as if upon stilts.

2. The Spanish method hurts the horses heels by the length of the shoe they set on, and with which they confine the heels upon the two quarters of the horse's heel, which joins the coronet, in such a manner that the foot becomes tormented and pressed so as not to be capable of spreading, which makes almost all the Spanish horses grow narrow heeled.

3. The English manner of shoeing is to keep the shoe-heels large and high in order to save the frog; by this means they deprive them of the liberty of going with ease upon a pavement; because the shoe does not bear upon the level, and produces an effect like that of a pivot, upon the middle of the shoe-heels and the vault or hollow.

4. The Turkish horses have also a great deal to do to keep themselves safe upon a pavement, because the shoe covers all the foot.

5. The French method of shoeing has the fault I observed before, of making their shoes too long ; of paring the feet and setting on one cramp on each shoe behind, which makes them go sideling ; it would be better that they had two cramps to each shoe, but they make but one for fear the horse should go lame ; I allow that cramps are useful, especially in descents, and in backing, but this cramp in a few days is worn, it slips upon a pavement, and has no effect but just when it is new ; again, does not the pavement also wear, while the stones grow convex in the middle, and make it slip from one to another, having no hold nor purchase between both ?

It is therefore very essential to leave off the cramps and to shoe the horse in such a manner that the frog may bear upon the ground, in order to enable him to stop short, and make him more sure-footed than with cramps : the frog will serve horses to go upon the smooth pavement, as felts enable men to go upon the ice.

It must be owned that the French method of shoeing is the best and most solid of all for flat-feet.

As to those horses who have tumors within the feet, and fissures without, or weak quarters, they must be shod in the semilunar manner ; that is, so as that the outer-heel of the shoe may be something longer, the inner very short, in order to

prevent the weights bearing upon the affected or painful part; there are several expedients which produce the same effect; we may even think of many others; for it is the business of the artist; but to this time I know of none better, more ready, nor more certain, than the half moon shoe.

I wish for the benefit of society that my attestation and experience were convincing enough to cause a reformation in a pernicious practice, which is subject to such great inconveniences; it would be the most agreeable recompence I could desire.

This is what I had to say upon this new method of shoeing; there are already some of my fraternity who practise it; and many gentlemen of knowledge approve of it, and all I have done myself in it for six months, confirms to me more and more that it is a good method; yet I every day bear many contradictions from all ranks of people; some condemn it from prejudice, others thro' ignorance, and others thro' malice. Some farriers, and several coachmen and grooms are against this method; I therefore think it my duty, to answer in a few words, all the objections which have come to my knowledge about it.

## OBJECTION I.

They say that this kind of shoeing will cause strains, bruises, and other ailments in the heel.

ANSWER. I have already demonstrated that the shoe-heels never yield as was thought ; that the weight of the horse forces the hoof to come upon the shoe-heel ; by which the horse's-heel is bruised, as if in a press ; and consequently having the shoe-heels short, he will be less subject to these disorders by this short shoeing, because the horse's-heel will but lightly touch the pavements, bearing the weight of the body intirely upon the middle of the foot, and upon the frog.

## OBJECTION II.

Some pretend the horse's-heel wears away.

ANSWER. To prove without reply, that this is false, that the heel can never be worn to the quick, and that its substance is of such a nature as to grow more than it wears ; it is that we are obliged to take it down every time we set on a shoe : but it is only in such horses as have the heels strong.

OBJEC-

## OBJECTION III.

It is said that I never open the heel, and that that is the cause of disorders.

ANSWER. There are three sorts of disorders, the first comes from a strain ; to which I have answered, the second from not opening the heel well ; but when ever I see them disposed that way, I pare them, leaving the frog in its full strength ; and the third sort proceeds from the natural structure of the foot ; and in this case whether the foot be pared or not, they will equally come on.

## OBJECTION IV.

They say that the frog ought to be fatigued, because the horse goes upon it.

ANSWER. I could rigorously appeal for this to experience : no horse shod in this new method has to this day shewed the least sign of the fatigue of the frog, or of its sensibility ; and I even do not believe that any one can say he ever saw horses lamed, having old shoes on, for having travelled upon the frog ; and it will be seen that it is scarce possible, when we reflect upon the whole particular structure of this part as I have given it in this work. It is a soft, spongy, flexible substance, which by its natural elasticity yields to the weight of the

G 4 body

body the instant the horse presses his foot against the pavement, and immediately recovers again.

There is, however, a case wherein a horse may become lame, by going upon the frog; but which never was objected to me; which is when it is hard and dry. The observation and anatomy of the foot have shewed me that it may cause lameness, because the horse in bearing upon the ground forces this hard part against the expansion of the tendon which is attached to the foot-bone, and the horse may become lame from the great sensibility of this part: but if I take off the little end of the frog with the buttress, he ought not to be lame.

#### OBJECTION V.

It is said the frog will be more subject to have spongy excrescences.

ANSWER. That happens only to such horses as are full of humours; and if there appears any disposition towards it, the frog may be pared, and the horse will go upon his heels, if they be strong, as safely, upon a smooth pavement.

#### OBJECTION VI.

They say the nerve is wearied, that is, that the Tendo Achillis is stretched or dragg'd; and suffers by this short shoeing, because the frog bears upon the ground.

ANSWER. It is just the very contrary.

Let

Let us observe the effects of the weight of the body upon the Tendo Achillis in the following circumstances.

If a horse be shod with cramps, then there is a great distance between the frog and the pavement : the weight of the body bears upon the cramps ; the frog which is now free in the air yields downwards, the tendon is stretched, and if the horse makes a sudden violent motion, the rupture of the tendon is almost inevitable : because the frog cannot reach the ground to ease the tendon, to which it ought to be the point of support ; if the tendon is not ruptured, yet the horse will be lame a long time after, because of the great distension of the fibres which were so much upon the stretch as to be near breaking.

If we set on shoes with only strong heels, the frog is not so high from the ground ; the weight of the body may indeed force the frog to touch the middle of a paved stone, and thereby prevent the great distension of the tendon ; but as the thickness of these heels hinders the substance of the frog to bear upon the ground, to yield and restore itself as much as it is capable of by its natural elasticity, the tendon must snap, by any violent and sudden spring, every other circumstance being equal.

But if a horse is shod without shoe-heels, the frog which bears all the horse's weight gives way at every step, and by its elasticity is restored to its natural state ; the tendon is never dragged

dragged or strained ; its fibres will not be susceptible of any violent distension, in case of any sudden violent motion.

I dare affirm before hand that a rupture of the tendon will never happen upon the middle of a paved stone ; and if it ever should, it could only be ruptured in the interstice between two of these paved stones. From what I have said, two things plainly appear : that all the different degrees of violence that one can imagine from its total rupture, to the most slight distraction of its fibres that can lame a horse, may happen to the tendon ; and that it is upon the frog alone that all these degrees depend, as it is more particularly laid down in the history of the fracture of the coronary-bone, and in the anatomy of a horse's foot.

#### OBJECTION VII.

It is said, the horse will be more subject to be injured by street nails, and to other accidents which proceed from pricking the fleshy sole.

ANSWER. As in this method the foot is not pared, the horny sole will always have its full natural strength ; and consequently will be less liable to be penetrated, than when it is made extremely thin.

#### OBJECTION VIII.

They say that the horse is not shod to be easy, that he goes in pain, and must be lame.

ANSWER.

ANSWER. If the horse goes uneasy, or is lame, it cannot happen from the shoeing, however short the shoe may be; if it be not from the different accidents that often proceed from the common methods of shoeing, and which may as well happen in the new way: which are 1. The foot being too much straitened; 2. Accidental pricks: 3. The shoe nails may bind the enchannelled flesh too much. 4. The shoe may bear too much upon the sole. 5. When the shoe heels press upon the weak heels of the horse. 6. When the sole is burnt. 7. Wounds of the fleshy sole made by the buttress.

In my way of shoeing I avoid four of these accidents. 1. The heel is never strained, because I put no part of the shoe upon it: 2. I preserve the sole intire, to which I never use the buttress. 3. The fleshy sole can never be burnt, nor wounded by the buttress, since it never is touched with it. Let the three other accidents abovementioned be taken care of, and I defy them to lame a horse that has a good foot, let the shoe be never so short.

#### OBJECTION IX.

It is said that the horse is liable to lose his shoes, because they are set on with only small nails.

ANSWER. It is most certain that a short shoe

shoe with small nails, will hold on better than a long shoe with large nails ; that it has less weight ; that the lever is shorter, which has yet less weight of the shoe, and by consequence it strains the clinches the less ; and does not divide the hoof like a large nail. Moreover I refer to the experiment. As to those who are no friends to the new method of shoeing, let them only clinch the nails in a careless manner, and the horse will cast his shoes, as they please.

#### OBJECTION X.

It is said that the horses that are not shod with cramps are most subject to slip.

ANSWER. I can affirm that the more dry and more smooth the pavement, and the more the frog or horses heel bears upon the ground, the horse will be the more secure ; and he will slip much less than if he had cramps ; even tho' he goes down very steep places, or backs strongly. What is most certain is, that the less shoe a horse wears the less he slips, because if it were possible he could do without any, he would not at all be liable to slipping.

I do not, however, engage that the shoeing I propose would have the same effect upon a moist or greasy pavement, or that the horses will hold on them so securely, especially on the hind feet ; I think indeed that large nails would in such places be of use ; which might also happen upon a slippery soil.

I have

I have observed that the common shoe wears away almost half more than that I propose ; if for example, I set on a shoe of two pounds weight, it will be half worn off by its service, upon a pavement ; and the same horse going the same ground, and in the same space of time, if he is shod with the half-moon shoe, it will not be diminished above a third part : the shoes may be weighed before they are set on, and afterwards, by which the truth of what I advance may be judged of, and we shall be convinced by that, that a horse shod according to my method, goes more lightly.

My new manner, which I repeat again, has nothing but prejudice against it ; anatomy which has taught me the structure of the foot, laid open to me all its advantages, and experience has confirmed them.

I hope, by the sequel, it will be more relished ; and that they will return from a prejudice, which has no other foundation, than being an old custom ; as of a multitude of ancient bad practices, which often turn out dangerous or useless, of which I think I ought to give a short account for the good of society, while the work I am about serves to make them the more public.

#### ERROR I.

I have seen a horse whose jugular vein was divided, perish by the ignorance of the operator,

tor, who not knowing the circulation of the blood, made a ligature upon the lower part, instead of the upper-part of the vein from whence the blood flowed ; and whilst he tried to stop it in the part from which it did not flow, the horse died.

I saw the same fault committed upon horses in whom the saphena was divided ; among others upon one who died while they were stopping the vein, because they made the ligature above, instead of making it below. Such as are more timorous than ordinary usually make two ligatures and divide them in the middle ; but there must never be but one upon whatsoever vein.

## ERROR II.

They stop up veins for different causes, under a notion that they are the vehicles for certain humours ; I saw the jugulars stopped up in horses, who became blind ; and that must be very prejudicial to every other part, because thereby they stop the course of the fluids. But there is yet something more, which is, that I am persuaded that this operation, independent of the accidents it occasions, is ever useless, for it is false that the veins carry any nourishment to the parts, for they ought to know that the arteries do that office.

ERROR

## E R R O R III.

When horses are foundered they stop the circulation of the blood without knowing it, with bands of straw, which they roll round the legs before and behind, or with a ribbon, and bind it very tight, for fear the disease should descend to the feet. I have seen horses who had gangrenes upon these parts, by such compressions.

## E R R O R IV.

It is a very bad method to suspend horses who cannot stand on their feet ; for while they leave them on the slings a gangrene happens where these pres. The reason of this is plain, it is because they stop the course of the fluids.

## E R R O R V.

There are some who pretend that the gripes in a horse are caused by the vives \*, and in order to cure it they open the maxillary glands which they vulgarly call the *Avives*, and, by this opening, often destroy the maxillary canals which carry the saliva to the mouth ; and sometimes the sore becomes fistulous, and the

\* Swellings of the glands under a horse's ears.

fluid is lost by this opening instead of going to the mouth, and destroys the horse.

### ERROR VI.

There are some who take out the lampas ; I have seen a horse who bled to death after this operation, for they were never able to stop the blood.

They perform this operation under a notion that this production of the roof of the mouth is preternatural : they burn out one or two of the ridges of the roof, which they call the bean or lampas, with a red-hot iron, and consequently make a sore upon the part.

It must therefore be observed, that it is a general rule that all young horses have their mouths more or less full of what are called lampas ; and sometimes they rise higher than the fore-teeth ; now in proportion as a horse grows older, the roof flattens of itself, and the teeth then appear to rise.

### ERROR VII.

Some horses fall off their stomachs, and it is pretended their loss of appetite is caused by some teeth grown above the rest, but this is a meer imagination ; for I have seen many horses who had some of their teeth considerably higher than others, and yet chewed their aliment the better.

better. I have proved that, in attempting to file these pretended overgrown teeth, they shake all the upper and under-jaws, and frequently even cause inflammations by the violent shocks of the files they use to lower the eminences : and this operation, far from making him feed with ease, prevents it. I have even seen teeth which were broken off by this operation.

### ERROR VIII.

They take out what is thought a nerve at the end of the nose for different reasons, which answers no end, and does more harm than good ; I have seen horses become blind upon it, and others seized with a gangrene, and that by the great inflammation that happens from this method upon the part. Our old practitioners pretend that this a is nerve which begins at the end of the nose, and extends to the last vertebra of the back (a meer error) ; for it is the two elevator muscles of the upper-lip which take their origin or attachment under the eyes, and terminate at the end of the nose ; from which nothing but a tendon is the result ; the operation consists in making an opening at the end of the nose, and raising the tendon with a wild goat's horn ; dividing the two muscles near their insertion, and pulling them forcibly out ; this operation is performed for several diseases.

## ERROR IX.

They say there are horses troubled with the vertigo, and therefore run a red-hot-iron thro' the foretop and mane, near the occipital bone ; which sometimes falls upon the cervical ligament which is inserted into the posterior crest or ridge of the occipital-bone, this operation is intended to destroy a live worm which beyond dispute is a meer chimera ; for I opened several of these horses, attacked (as they said) with the same disorder, and never saw any worms, nor any person who said he ever found any. I believe this disorder to be nothing but an inflammation of the brain. I saw a horse cured of this inflammation, but he was plagued for four months with the application of the cautery, and not being able any longer to hold up his head, he was abandoned. I found that the cautery had destroyed the cervical ligament, which confirms what I have said above.

## ERROR X.

I saw a horse into whose throat they had thrust a leek, imagining he had swallowed a feather, which made him cough ; they thrust it to the very trachea and several of its fragments remained behind, which made him cough more and more : they then thrust in an oxe's sinew down

down his throat which they forced yet farther, and the horse was suffocated ; I opened him and found the fragments of the leek as far down as the *Bronchia*.

As to the notion of a horse's cough proceeding from feathers swallowed down, it is very false, for before they can reach the œsophagus they are moistened by the saliva, which is always in great abundance in horses ; I more than once made the experiment ; for I gave to some greedy horses feathers of different sizes to eat among their hay, which never did them any harm ; they very often eat them in farms where there is poultry, and nothing happens to them from it.

#### ERROR XI.

I once saw a horse who was thought lame in the shoulder, and was forced to go on the part affected, by tying up the other foot to the leg with a cord ; this is called swimming on dry land ; some time after there appeared a swelling on the coronet, which shewed the seat of the lameness to be in the foot, and that it was very injudicious to have forced him to move upon the diseased part. This horse, instead of being relieved, continued lame.

#### ERROR XII.

They perform, what is called *drawing the thorn*, upon lame horses, being persuaded that

the head of the thigh-bone is dislocated, with an intention consequently of reducing it.

Let us suppose it was so, (which I never yet saw) I have actually seen the femur and its head fractured in its cavity, and even the ossa ilia, but never observed it to be dislocated, nor has any one ever pretended to me to have seen it; but in this supposition, I say, I do not believe it is possible to reduce it.

*To draw the thorn,* is to tie one end of a rope to the fetlock of the diseased limb, and the other to a flexible tree, from which they make the horse pull by whipping him; I have seen some who were but a little lame, and after this torture, became more lame, and remained so all their lives.

### ERROR XIII.

For the cure of drags and strains they have recourse to the skin as if it was the seat of the disorder; it was never seen that a horse was lame from cutaneous diseases, except sometimes by a string of the farcy; which compresses the muscles and hinders their motion; or by some abscess formed upon them.

The common remedy for these disorders is to pass setons or rowels between the skin and cutaneous muscles, made either of simple cords or mixed with hair; or of ribbon, or leather; they also put in straw and twigs of birch or other wood; there

there is an infinite number of other remedies, but it would be too tedious to enumerate them, all which tend to promote suppuration in some part or other, and produce no other effect than to punish the horse to no manner of purpose. These operations should be regarded as kinds of caustics which are of no other use than to cause a discharge of humours.

I once was obliged by the importunities of the owner to fire his lame horse (as it is yet in practice) who, he said, had a strain; he made me apply the cautery to a great many points which penetrated to the muscles; a great inflammation came on, and the animal became more lame than he ever was before; the whole thigh was dried up, and was lamed by it for ever. I performed this operation against my will; but as I was subject to his orders for that time, I was obliged to satisfy him.

#### ERROR XIV.

There is yet a method which in my opinion is another error, which is bleeding horses in the month of May, even though they are in perfect health; I cannot see upon what this custom is founded, especially as they are well; indeed I have seen many become ill by it.

I shall add this last short reflection upon horses said to be cold in the shoulders, or seized in the shoulders.

I think it is in the joints of the foot, and not  
in

in the shoulders, the causes of laming horses ought to be looked for.

What leaves no manner of room to doubt that the origin of this disease is not solely in the articulations, is, that after having dissected horses whom they thought cold in the shoulders, I found that the synovia of the joints in the foot was diminished and changed. I believe that when a horse is very hot, the sweat which falls from the shoulders and neck upon the legs, in proportion as it descends from the trunk grows cold upon the lower extremities, which moreover cannot be so warm as the muscles.

It is to this distance, to this organisation, and to the cooling of the sweat upon these parts we may attribute the diminution and alteration of the synovia which first causes the foot to chop or crack and then lames the horse.

This evil may be prevented by walking a horse gently after hard riding, that he may cool by degrees, till he is well dried; he is then to have his legs well rubbed down, to be covered and kept very warm, in his cloths for an hour; no risque is run in carrying him to the water to wash him, if he is splashed with dirt, though he is in a sweat; care must only be taken not to let him drink, and to walk him before you put him into the stable, that he may not grow suddenly cold; the custom of rubbing the legs with straw is salutary, being intended to refresh

the

the parts, and so is that of keeping them warm; in as much as it prevents foundering, glanders, and other accidents.

The subjects would be inexhaustible if I should enlarge upon all those that are the objects of this book ; but I leave it to those of my fraternity who are more learned and skilful than myself to publish what I may have forgot : and hope that the little light I have thrown upon our art, which is yet in too much obscurity, will engage them to bring it to perfection ; and for my part, I declare I shall be sincerely obliged not only to those of my profession, but also to all lovers of horsemanship, if they will be so kind as to shew me my errors, as well as communicate their own reflections and discoveries.

It appears to me that the English farriers have neither more knowledge nor experience than we have in the subject, and particularly in that of the circulation of the blood ; nor indeed in a vast number of diseases, for which they generally apply the same remedies without distinction, and without endeavouring to be certainly acquainted with the true cause.

Here is the manner in which Mr. Bartlet, a surgeon of London, explains himself upon the matter ; who has published a book this year, which I have caused to be translated, entitled : *The Gentleman's Farriery, or a practical Treatise on the Diseases of Horses* : wherein he has pointed out the best authors who have written upon the subject.

He

He says, in the 4th chap. which treats of fevers, that he cannot recover from his amazement, that farriers are so ignorant in the knowledge of the pulse; the following are his words: "A due attention to the pulse is so important an article, in order to form a proper judgment in fevers, that it would appear amazing it has so much been neglected, if one did not reflect that the generality of farriers are so egregiously ignorant that they have no manner of conception of the blood's circulation, nor in general have they ability enough to distinguish the difference between an artery and a vein. With such pretty guardians do we intrust the health of the most valuable of animals!"

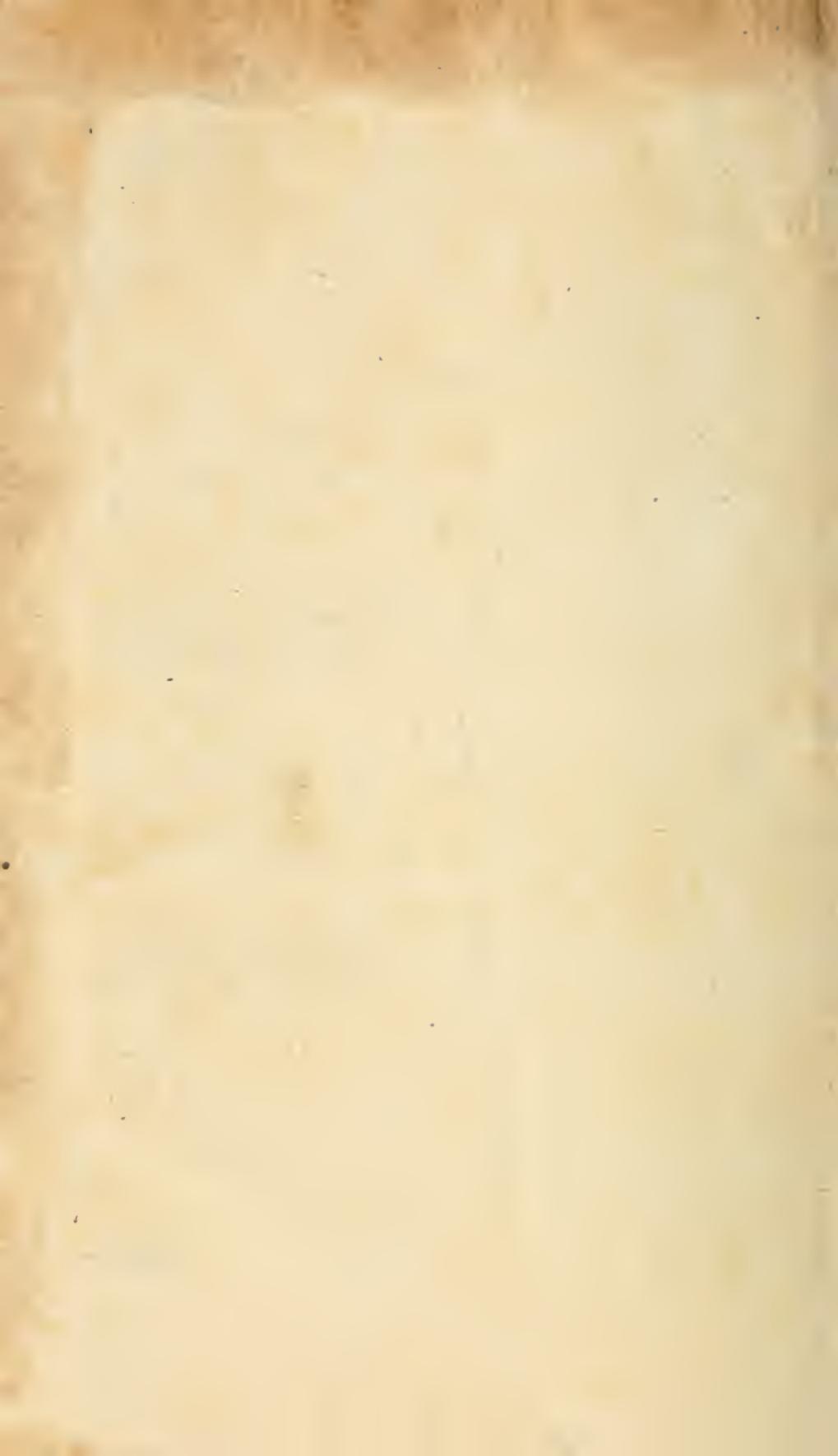
I forbear mentioning certain discoveries, cures and operations, of which Mr. Bartlet gives the account in his book; which appeared, to me, so much the more just, as they are founded upon an exact knowledge of the anatomy of a horse, till I shall be able to mention with certainty his method of docking a horse, and of the description of the machine he has invented for performing that operation.

As I have laid down to myself a plan of never giving any thing to the public but what is certain and confirmed by infallible experiments, I will first prove it to myself before I communicate it.









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